Attachment 3_Drawings

A&E SERVICES FOR SHADE SAIL

AT AMERICAN CENTER POOL

Location:

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM), PO BOX 114

AT AMERICAN CENTER POOL

Owner:

AMERICAN EMBASSY at LAO PDR

DESIGN BY

apa Design & Consultant
I ARCHITECTS I INTERIORS I LANDSCAPE I CONSULTANT I GRAPHICS I

Phonephanao-Phonetong Rd., Phonephanao Village
Savsettha District. Vientiane Lao PDR.
Tel / Fax: (856-21) 263840, (856-20) 55529678
PO BOX: 1459, Email: apa.2002@hotmail.com
Website: apa-laos.com

DESIGN SUBMISSION FOR CONSTRUCTION

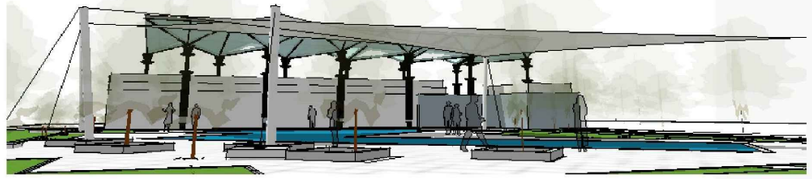
05/March/2021

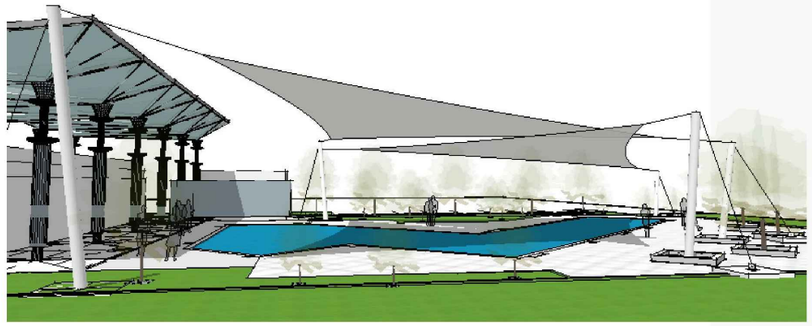
ARCHITECTURE DRAWING

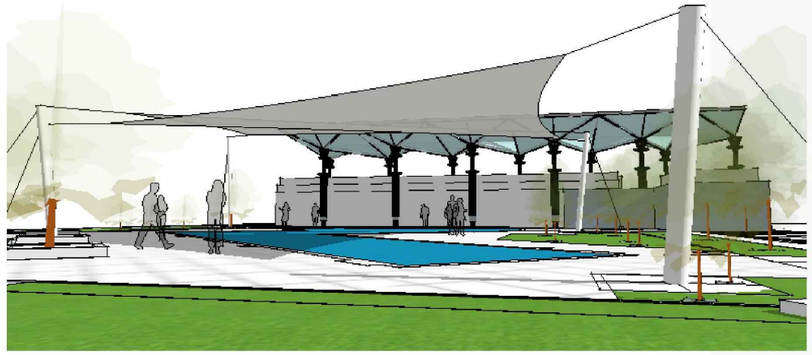
No.	DRAWING NO	DESCRIPTION
	A-000	SYMBOL SPECIFICATIONS
1	A-001	TENSION POOL PERSPECTIVE
2	A-002	EXISTING LAYOUT
3	A-100	
4	A-101	MASTER PLAN
5	A-102	POSITION PLAN
6	A-200	
7	A-201	
8	A-202	ELEVATIONS&SECTIONS
9	A-300	ELEVATION-01
10	A-301	ELEVATION-02
11	A-302	SECTION A-A
12	A-600	DETAIL
13	A-601	FABRIC DETAIL 01
14	A-602	FABRIC DETAIL 02

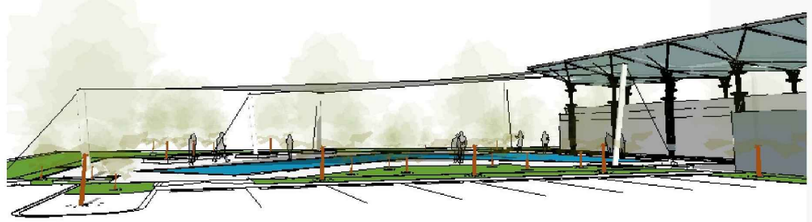
STRUCTURAL DRAWING

No.	DRAWING NO	DESCRIPTION
		DESCRIPTION
1	S-100	
2	S-103	STUCTURE SPECIFICATION 01
3	S-104	STUCTURE SPECIFICATION 02
4	S-105	STUCTURE SPECIFICATION 03
5	S-106	STUCTURE SPECIFICATION 04
6	S-107	STUCTURE SPECIFICATION 05
7		
8	S-200	STRUCTURE SPECIFICATION 03
9	S-201	FOOTING PLAN
10	S-202	COLUMN BASE & FOOTING DETAIL F1
11	S-203	COLUMN BASE & FOOTING DETAIL F2
12	S-204	COLUMN BASE & FOOTING DETAIL F3
13	S-205	JOINT TENSION DETAIL
14		

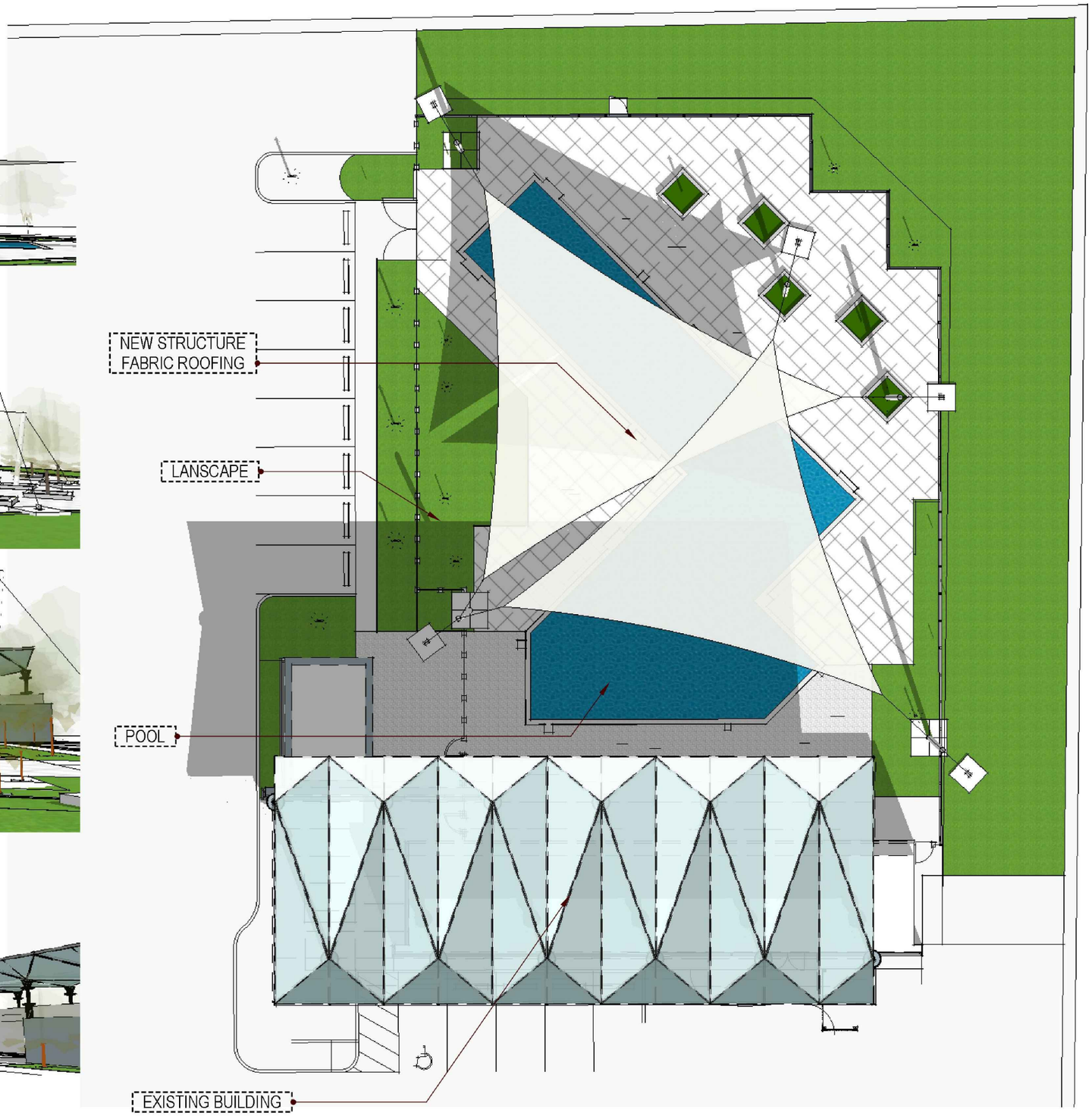








PERSPECTIVE
SCALE



TOP VIEW
SCALE

apa Design&Consultant
ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

A&E SERVICES FOR SHADE SAIL
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

PERSPECTIVE

ARCHITECT
1.
2.
3.
ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.
OWNER

SEAL/SIGNATURE

DRAWING INFORMATION
Drawing Scale:
Drawn By: APA
Checked By: APA

SHEET No. A-001

05/03/2021

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

EXISTING LAYOUT

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

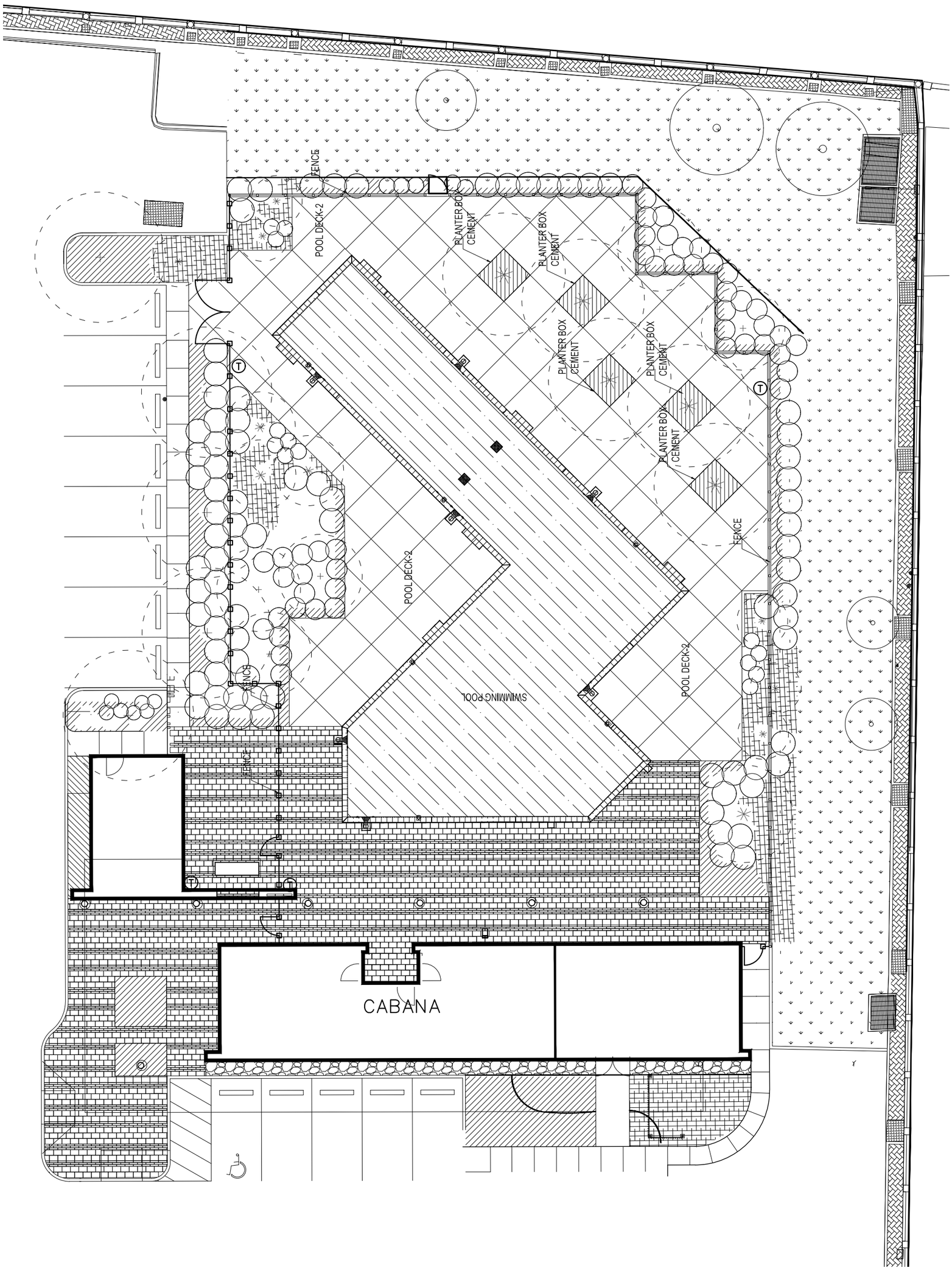
SEAL/SIGNATURE

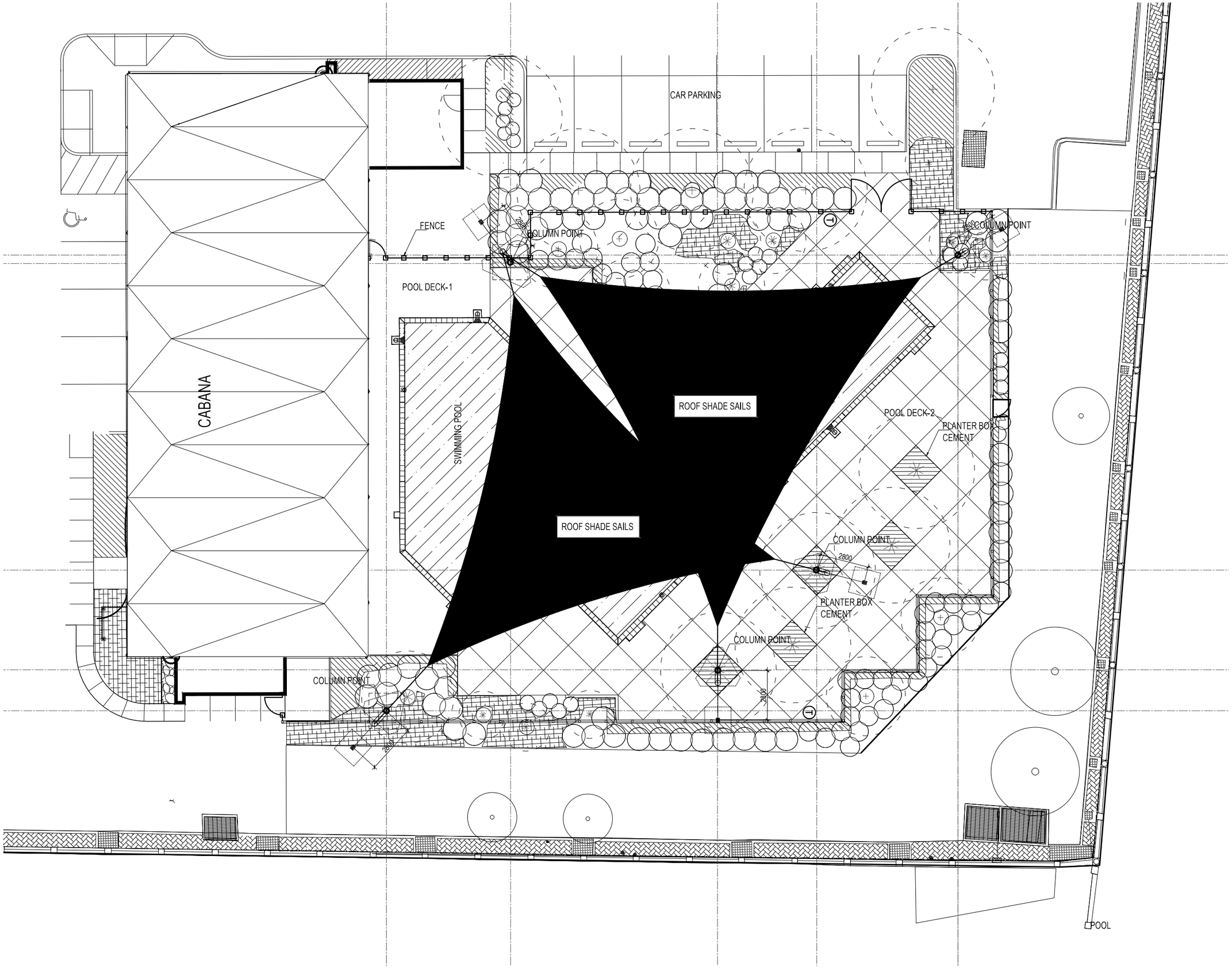
DRAWING INFORMATION

Drawing Scale: -
Drawn By: APA
Checked By: APA

SHEET No. A-002

05/03/2021





Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

A&E SERVICES FOR SHADE SAIL
-
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

MASTERPLAN

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale: 1/200
Drawn By: APA
Checked By: APA

SHEET No. A-101

27/01/20/20

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ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

SHADE SAILS POSITION PLAN

A&E SERVICES FOR SHADE SAIL

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

SEAL/SIGNATURE

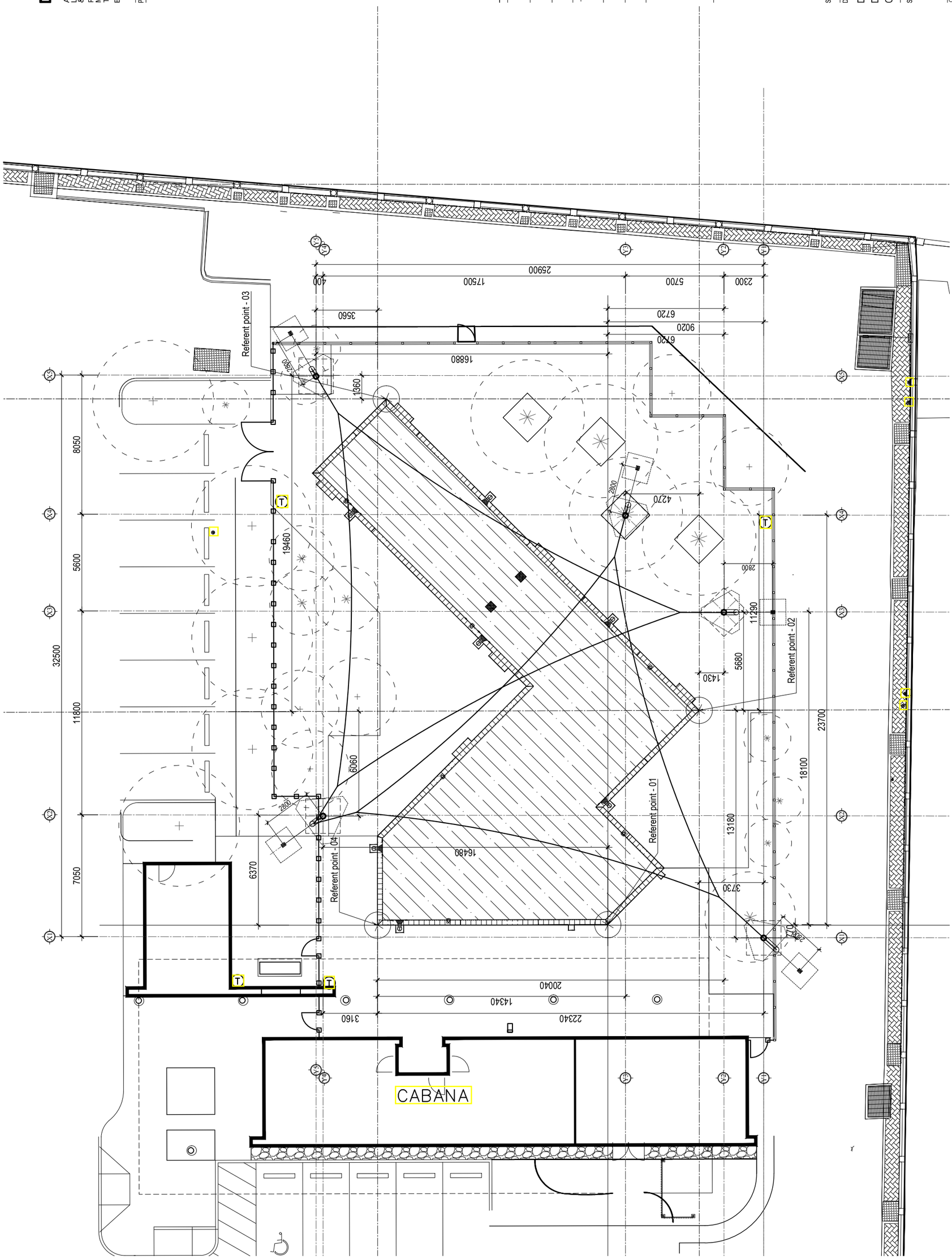
DRAWING INFORMATION

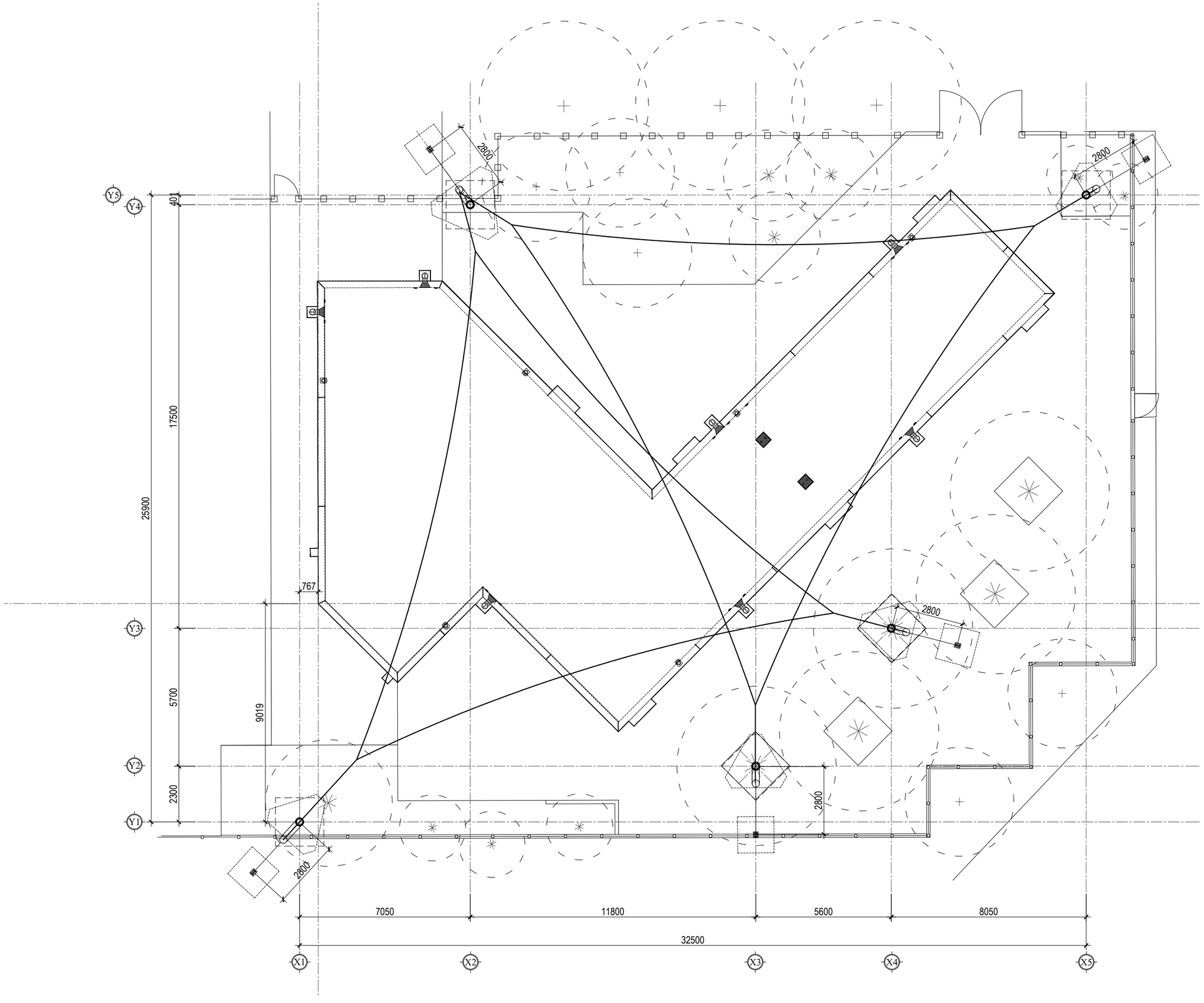
Drawing Scale: 1/200
Drawn By: APA
Checked By: APA

SHEET No. A-102

-

05/03/2021





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Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

A&E SERVICES FOR SHADE SAIL
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

PLAN

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

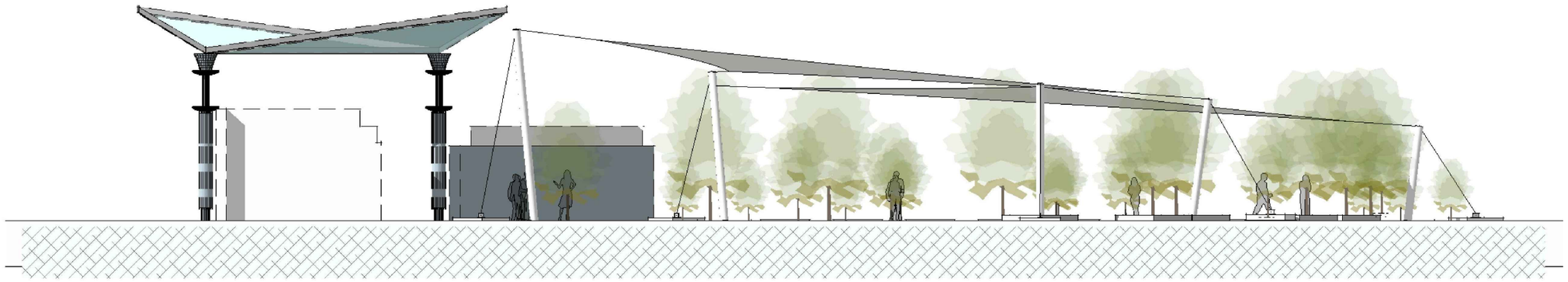
SEAL/SIGNATURE

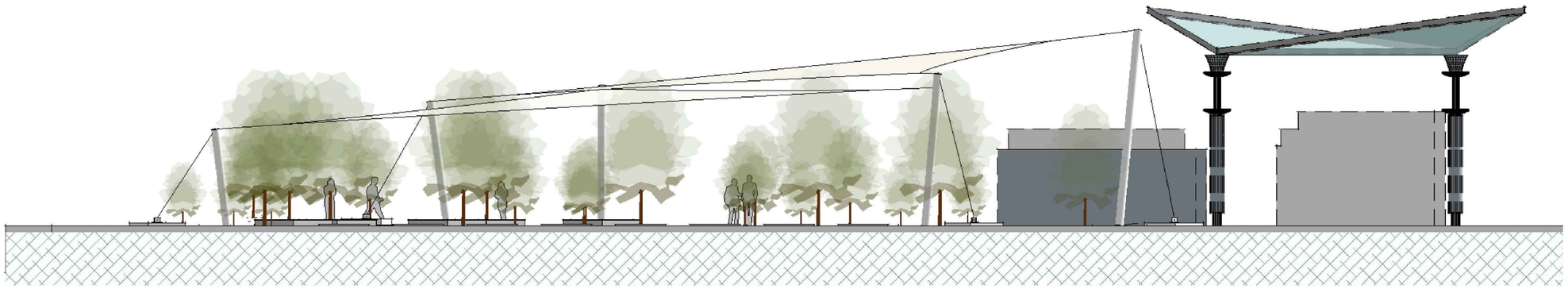
DRAWING INFORMATION

Drawing Scale: 1/150
Drawn By: APA
Checked By: APA

SHEET No. A-201

05/03/2021





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ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

ELEVATION-01

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

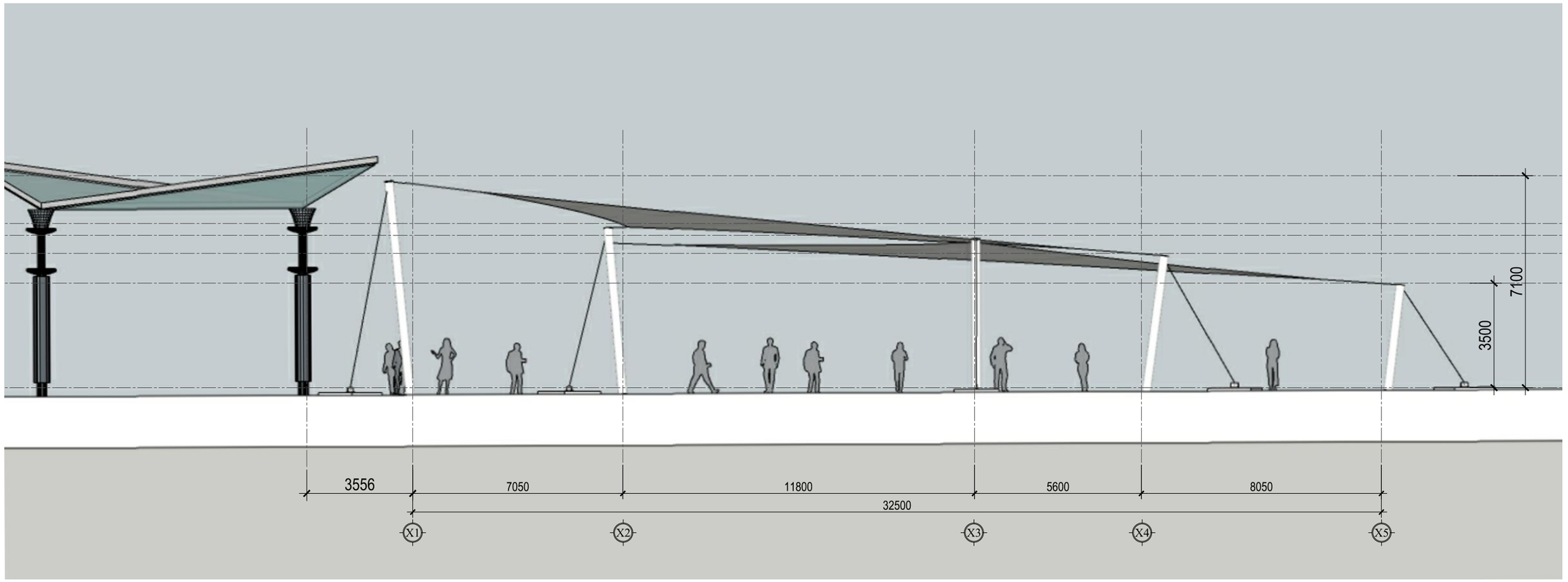
SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale: 1/150
Drawn By: APA
Checked By: APA

SHEET No. A-302

05/03/2021



apa
Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

ELEVATION-02

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

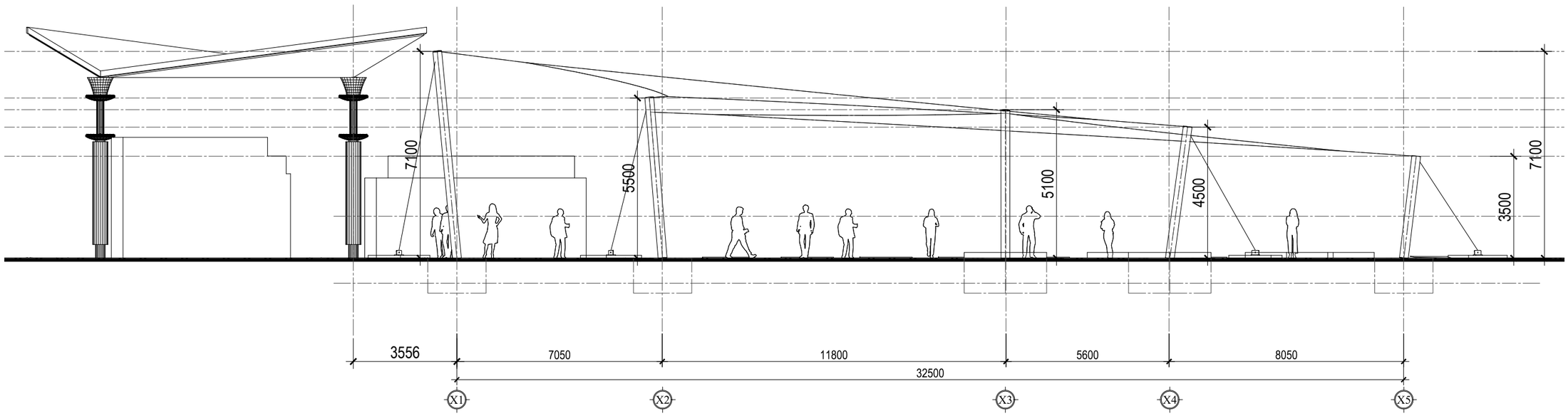
SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale: 1/150
Drawn By: APA
Checked By: APA

SHEET No. A-301

05/03/2021



Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

SECTION A-A

A&E SERVICES FOR SHADE SAIL
-
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT	
1.	
2.	
3.	
ENGINEER	
1.	Dr. Doungmixay DOUNSUVANH
2.	
3.	
OWNER	

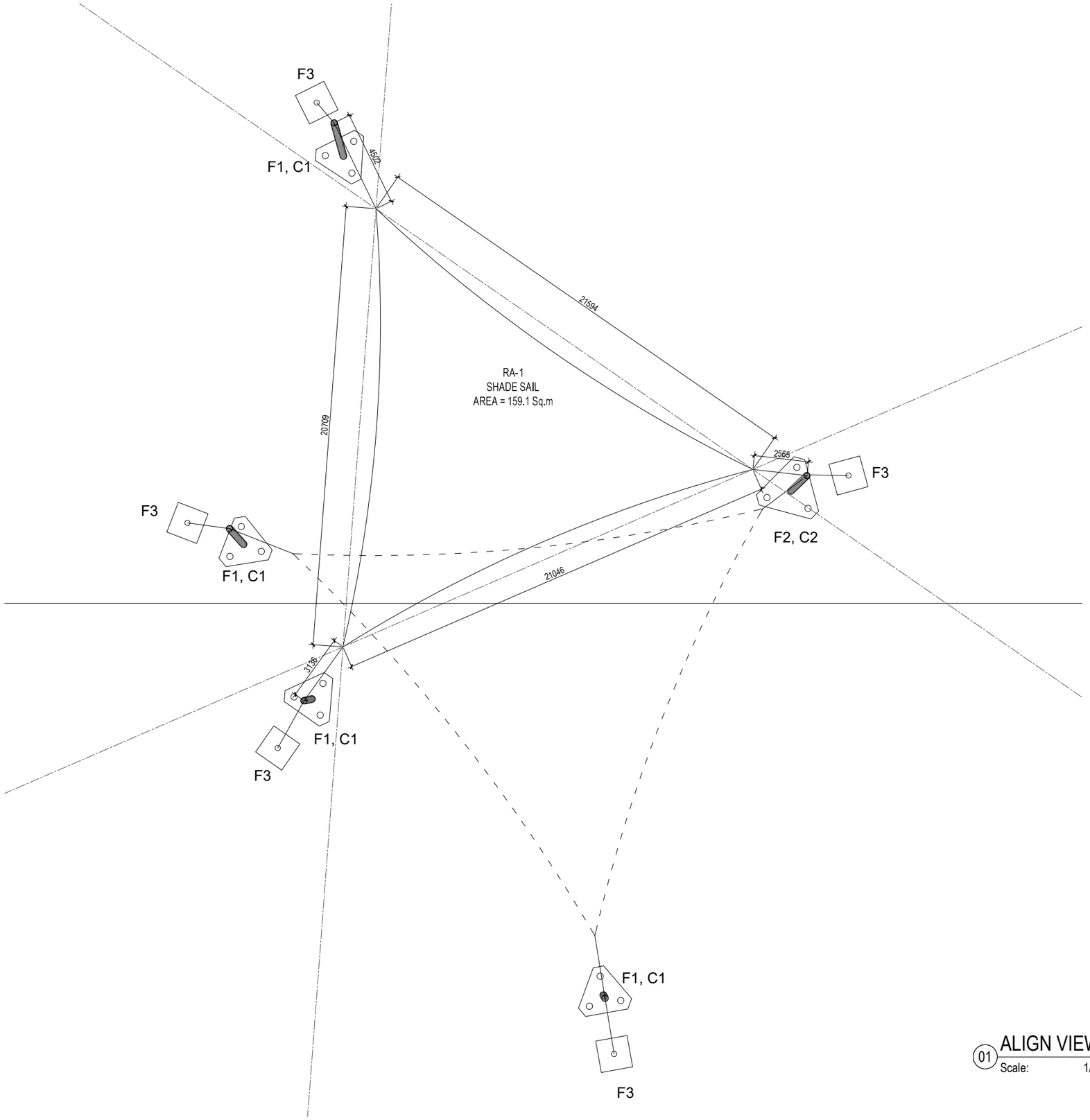
SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale:	1/150
Drawn By:	APA
Checked By:	APA

SHEET No. A-303

05/03/2021



01 ALIGN VIEW RA-1
Scale: 1/150

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ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

A&E SERVICES FOR SHADE SAIL
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

FABRIC DETAIL 01

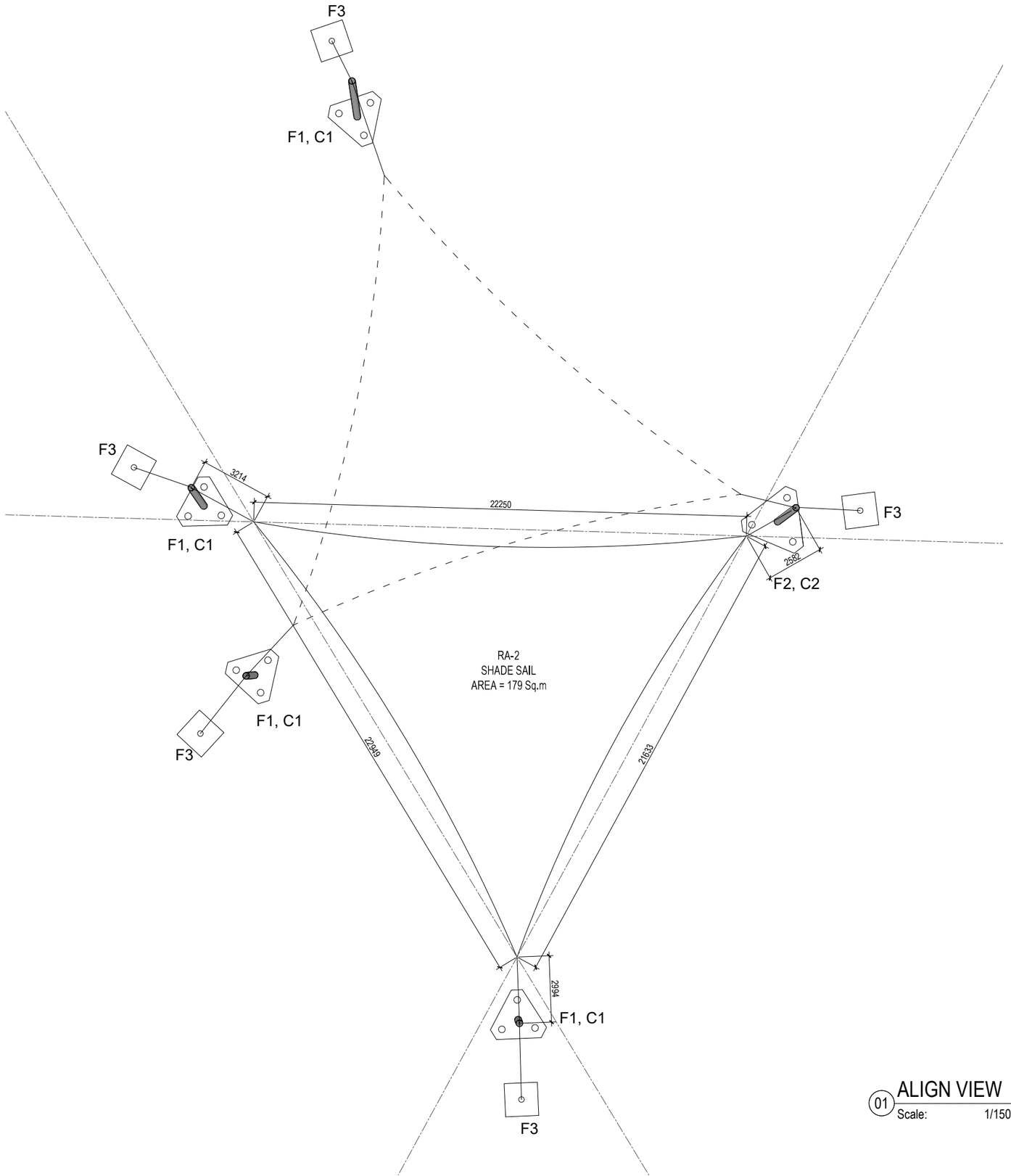
ARCHITECT
1.
2.
3.
ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.
OWNER

SEAL/SIGNATURE

DRAWING INFORMATION
Drawing Scale: 1/150
Drawn By: APA
Checked By: APA

SHEET No. A-601

05/03/2021



01 ALIGN VIEW RA-2
Scale: 1/150

Design&Consultant
ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

FABRIC DETIAL 02

A&E SERVICES FOR SHADE SAIL
-
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.
ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.
OWNER

SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale: 1/150
Drawn By: APA
Checked By: APA

SHEET No. A-602

05/03/2021

A. CODES AND STANDARDS

THE FOLLOWING CODES AND SATANDARDS, INCLUDING SPECIFICATION REFERENCED WITHIN, SHALL APPLY TO THE DESIGN, CONSTRUCTION QUALITY CONFROL AND SAFETY OF ALL WORK PERFORMED ON THIS PROJECT.

1. INTERNATIONAL BUILDING CODE (IBC) 2015, AS MODIFIED BY THE DEPARTMENT OF STATE(DOS) OVERSEAS BUILDINGS OFFICE (OBO) 2018 DESIGN STANDARDS.
2. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) MINIMUM LOAD REQUIREMENTS FOR BUILDING AND OTHER STRUCTURES (ASCE 7-10).
3. AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318M-11) EXCEPT AS MODIFED BY OBO 2018 DESIGN STANDARDS.
4. CONCRETE REINFORCING STEEL INSTITUTE (CRSI 2005).
5. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION FOR STEEL BUILDING (AISC 360-10).
6. AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE (AWS D1.1-06).
7. BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530-13/ASCE 5-13/TMS 402-13) AND THE SPECIFICATION FOR MASONRY STRUCTURES (ACI 530.1-13/ASCE 6-13/TMS 602-13).

B. GENERAL

1. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS SHALL COMPLIMENT EACH OTHER AND SHALL BE CONSIDERED AN INTEGRAL PART OF THE STRUCTURAL REQUIREMENTS FOR THIS PROJECT.
2. THESE NOTES APPLY TO CONTRACTORS, SUBCONTRACTORS, MANUFACTURES, SUPPLIES, FABRICATORS, ERECTORS, ETC ENGAGED IN THE EXECUTION OF WORK INDICATED ON THESE DRAWINGS.
3. DO NOT SCALE DRAWINGS.
4. ALL DIMENSIONS WITHOUT A DECIMAL ARE IN MILLIMETERS (mm) AND ALL DIMENSIONS WITH A DECIMALARE IN METERS (m) U.N.O.
5. ALL DEMENSIONS AND ELEVATIONS INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR AND SHALL BE COORDINATED WITH THOSE INDICATED ON THE ARCHITECTURAL DRAWINGS. REPORT ALL DISCREPANCIES TO THE CONTRACTING OFFICER FOR RESOLUTION BEFORE PROCEEDING.
6. ALL ELEVATIONS ARE REFERENCED FROM ARCHITECTURAL DRAWINGS.
7. DETAILS, SECTIONS, AND NOTES SHOWN ON THESE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR CONDITIONS ELSEWHERE UNLESS OTHERWISE SHOWN OR NOTED.
8. COORDINATE WITH ALL DRAWINGS FOR PERTINENT INFORMATION RELATED TO THE STRUCTURAL WORK. ANY CHANGES TO THE STRUCTURAL SYSTEMS SHALL BE REDESIGNED BY A PROFESSIONAL ENGINEER AT NO COST TO THE GOVERNMENT OR A/E AND SUBMITTED TO THE CONTRACTING OFFICER FOR REVIEW. SUBMITTAL SHALL BE ACKNOWLEDGED IN WRITING BEFORE BEGINNING CONSTRUCTION.
9. REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL DRAWINGS FOR THE SIZE AND LOCATION OF ALL OPENINGS,SLEEVES, CHASES, CONDUITS, DEPRESSED AREAS, FLOOR FINISHES, CURBS, FILLS, EMBEDDED ITEMS, MASONRY DETAILS, AND MISCELLANEOUS STEEL BEFORE DETAILING STRUCTURAL MEMBERS OR PLACING CONCRETE.
10. THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION THROUGHOUT THE PROJECT DURATION. HE SHALL PROVIDE BRACING, SHORING, AND INSTITUTE MEASURES NECESSARY TO PROJECT ALL WORK BOTH NEW AND EXISTING, FROM DAMAGE, BREAKAGE, SETTLEMENT, OR COLLAPSE THAT MAY RESULT FROM THE CONSTRUCTION ACTIVITY.
11. IMPLEMENTING JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

C. STRUCTURAL DESIGN LOADS

1. GRAVITY SUPERIMPOSED DEAD LOADS

SHADE SAIL MANBRANE ROOF	0.003 kN/m^2
ROOFING (MEMEBRACE & RIGID INSULATION	0.5 kN/m^2
ROOF PAVERS	1.5 kN/m^2
CEILING, MEP, ETC.	0.5 kN/m^2
FINISH FLOOR TPPING IN ATRIUM & LOBBY	2.0 kN/m^2

2. GRAVITY LIVE LOADS:

(PER OBO REQUIREMENTS, LIVE LOADS ON BEAM AND SLABS ARE NOT REDUCED. LIVE LOADS ON COLUMNS, WALLS, AND FOUNDATIONS ARE REDUCED PER IBC AS MODIFIED BY OBO-ICS)

PARTITIONS	1.0 kN/m^2
OFFICES, STAIRS, BALCONIES, CORRIDORS, LOBBY AREAS, FIXED SEATING ASSEMBLY, LIGHT STORAGE AREAS, WAREHOUSE MEZZANINES, UPS ROOMS & BATTERY ROOMS	6.0 kN/m^2
COMMUNICATION AREAS VAULTED AREAS, MAIN COMPUTER ROOMS & SECURE CONFERENCE ROOMS	7.5 kN/m^2
HEAVY STORAGE ROOMS, WAREHOUSE FLOORS, & EMERGENCY GENERATOR ROOMS	7.5 kN/m^2
RESIDENTIAL LIVING QUARTERS (MSGQ)	2.0 kN/m^2
RESIDENTIAL CORRIDORS & FOYER (MSGQ)	3.0 kN/m^2
RESIDENTIAL REPRESENTATIVE AREAS (MSGQ)	5.0 kN/m^2
UTILITY BUILDING	5.0 kN/m^2
CAC BUILDINGS	5.0 kN/m^2
ANTENNA PLATFORMS & M/E/P PLATFORMS	5.0 kN/m^2

3. GRAVITY ROOF LIVE LOADS:

MINIMUM ROOF LIVE LOAD, UNO	1.5 kN/m^2
OVERHANG EAVES	3.0 kN/m^2
NOB ROOF	6.0 kN/m^2

4. GRAVITY SNOW LOAD:

GROUND SNOW LOAD, (Pg)	0
TERRAN CATEGORY	(SITE SPECIFIC)
EXPOSURE OF ROOF	(SITE SPECIFIC)
SNOW EXPOSURE FACTOR, (Ce)	(SITE SPECIFIC)
SNOW LOAD IMPORTANCE FACTOR, (Is)	1.1 (NOB UTILITY) 1.0 (MSGQ, CAC BUILDINGS)
THERMAL FACTOR,	(Ct)1.0
FLAT - ROOF SNOW LOAD, (Pf)	(SITE SPECIFIC)
UNBALANCED, DRIFTING & SLIDING SNOW	(SITE SPECIFIC)
RAIN - ON - SNOW SURCHARGE LOAD	(SITE SPECIFIC)

5. WIND LOADS:

a. MAIN WIND-FORCE RESISTING SYSTEM (MWFRS):

ULTIMATE WIND SPEED (3 SECOND GUST)	59 m/s
WIND EXPOSURE CATEGORY	B
INTERNAL PRESSURE COEFFICIENT	(SITE CPECIFIC)
DESIGN WIND PRESSURES	SEE WIND PRESSURE TABLE AND GRAPHIC ON GEN S003

b. BUILDING COMPONENT & CLADDING:

DESIGN WIND PRESSURES	(SITE SPECIFIC) (PROVIDE GRAPHIC)

c. ANTENNAS

OPERATIONAL WIND SPEED	22 m/s
MAXIMUM SUPPORT ROTATION	0.13 DEGREES

6. SEISMIC LOADS:

SEISMIC IMPORTANCE FACTOR,	I1.25 (NOB/UTILITY) 1.0 (ALL/OTHERS BUILDINGS)
RISK CATEGORY	III (NOB/UTILITY) II (ALL OTHER BUILDING)
SPECTRAL RESPONSE ACCELERATION,	
SHORT PERIOD (Ss)	0.31
1-SECOND PERIOD (S1)	0.11
SITE CLASS	(SITE SPECIFIC)
DESIGN SPECTRAL RESPONSE COEFFICIENTS	
SHORT PERIOD (SDs)	(SITE SPECIFIC)
1-SECOND PERIOD (SD1)	(SITE SPECIFIC)
SEISMIC DESIGN CATEGORY	(SITE SPECIFIC)
BASIC-SEISMIC-FORCE-RESISTING SYSTEM:	(SITE SPECIFIC)
DESIGN BASE SHEAR, V	(SITE SPECIFIC)
SEISMIC RESPONSE COEFFICIENT, C	(SITE SPECIFIC)
RESPONSE MODIFICATION FACTOR, R	(SITE SPECIFIC)
ANALYSIS PROCEDURE USED	(SITE SPECIFIC)

NON-STRUCTURAL COMPONENTS SHALL BE DESIGN AND CONSTRUCTION IN ACCORDANCE WITH THE OBO DESIGN REQUIREMENTS.

7. SOIL LATERAL LOADS:

DESIGN LATERAL SOIL LOAD PER GEOTECHNICAL REPORT.

ALLOWABLE BEARING PRESSURE: 2.089KSF

D. FOUNDATIONS

1. FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT, DATED 23.02.2012 (GEOTECHNICAL ENGINEERING REPORT : RECREATIONAL FACILITIES ADMINISTRATIVE COMPOUND VIENTIANE, LAOS. OBO CONTRACT NUMBER:SAQMMA-11-C-0277 , SCHNABEL REFERENCE 11223014)
2. THE CONTRACTOR SHALL OBTAIN THE GEOTECHNICAL REPORT BEFORE BEGINNING CONSTRUCTION. VERIFY ALL EXISTING FIELD CONDITIONS THAT MAY AFFECT THE INSTALLATION OF THE FOUNDATION SYST PRIOR TO STARTING WORK. LOCATE AND PROTECT ALL ULTILITIES WHICH MAY BE AFFECTED BY THE CONSTRUCTION PROCESS.
3. FOUNDATION SUBGRADE, CAPACITY AND FINAL ELEVATIONS SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE.
4. THE SLABS-ON-GRADE SHALL BE PLACED OVER A VAPOR BARRIER OVER A MINIMUM OF 150 mm OF COMPACTED DRAINAGE FILL MATERIAL, OVER A COMPACTED SUBGRADE WHICH HAS BEEN INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER. ALL SLABS-ON-GRADE SHALL BE REINFORCED WITH A MINIMUM OF ONE (1) LAYER OF WELDED WIRE REINFORCEMENT, UNLESS NOTED OTHERWISE.
5. EXTED BOTTOM OF PERIMETER FOUNDATIONS AND GRADE BEAMS TO THE FROST LINE.
6. PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY FROST OR ICE FROM PENETRATING ANY FOUNDATION OR SLAB SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURES.
7. NO MUD SLABS, GRADE BEAMS, WALLS, OR SLABS SHALL BE PLACED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST, OR ICE. SHOULD WATER OR FROST ENTER A FOOTING EXCAVATION AFTER SUBGRADE APPROVAL, THE SUBGRADE SHALL BE RE-INSPECTED BY THE GEOTECHNICAL ENGINEER AFTER REMOVAL OF WATER OR FROST.
8. DO NOT PLACE UTILITY LINES THROUGH OR BELOW FOUNDATIO WITHOUT APPROVAL BY PROJECT DIRECTOR OR CONTRACTING OFFICER REPRESENTATIVE (COR).
9. DO NOT BACKFILL AGAINST TANKS OR BASEMENT WALLS UNTIL FLOOR SLABS ARE IN PLACE. BACKFILL AGAINST BOTH SIDES OF WALLS EQUALLY UNTIL THE LOWER ELEVATION IS ATTAINED.
10. INSTALL FOUNDATION DRAINS WHEN THE INTERIOR SLAB ELEVATION IS LOWER THAN THE EXTERIOR GRADE ELEVATION.
11. SEE ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING AND DAMP PROOFING DETAILS./

E. CAST-IN-PLACE CONCRETE

1. CAST-IN-PLACE CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301-10, SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING, AND THE ACI MANUAL OF STANDARD PRACTICE.
2. ALL CONCRETE SHALL BE NORMAL WEIGHT.
3. REFER TO TABLE 4 FOR MINIMUM CONCRETE COMPRESSIVE STRENGTHS AT 28 DAYS.
4. ALL REINFORCING STEEL SHALL BE NEW DEFORMED BILLET STEEL CONFORMING TO ASTM A615/A615M-14, GRADE 420, OR ASTM A706/A706M-14, GRADE 420, UNO.
5. WELDED WIRE REINFORCEMENT SHALL CONFORM TO ASTM A1064/A1064M DELIVERED IN FLAT SHEETS.
6. WHERE BAR LENGTHS ARE INDICATED ON THE DRAWINGS, THE LENGTH OF ANY HOOK, IF REQUIRED, IS NOT INCLUDED. USE STANDARD 90° BAR HOOK UNLESS NOTED OTHERWISE.
7. FIELD BENDING OF REINFORCING BARS IS NOT PERMITTED.
8. WELDING OF REINFORCING STEEL IS NOT PERMITTED, UNLESS NOTED OTHERWISE.
9. DOWELS IN FOUNDATIONS TO MATCH COLUMN OR WALL VERTICAL REINFORCING, UNLESS NOTED OTHERWISE.
10. PROVIDE WELDED WIRE FABRIC IN ALL TOPPING SLABS, UNLESS NOTED OTHERWISE.
11. REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF ALL EMBEDDED ITEMS, SLEEVES, SLAB DEPRESSIONS, OPENING, ETC. REQUIRED BY OTHER TRADES. RECONCILE THEIR EXACT SIZES AND LOCATIONS BEFORE PROCEEDING WITH THE WORK. ALL ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACING OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
12. COREDRILLING FOUNDATIONS, COLUMNS, BEAMS, OR SLABS IS NOT PERMITTED UNLESS APPROVED BY THE PROJECT DIRECTOR/COR.
13. PROVIDE HORIZONTAL CONTROL/CONSTRUCTION JOINTS IN SLABS AND BEAMS AND VERTICAL CONTROL/CONSTRUCTION JOINTS IN WALLS AS INDICATED ON THE DRAWINGS. ALL BEAMS AND SLABS SHALL BE CAST MONOLITHICALLY. SUBMIT ALTERNATE AND/OR ADDITIONAL CONSTRUCTION JOINT LOCATIONS AND DETAILS TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO CONSTRUCTION. REINFORCEMENT SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS UNLESS DETAILED OTHERWISE ON THE DRAWINGS. SUBMIT ALL CONSTRUCTION JOINT LOCATIONS WITH THE REINFORCING STEEL SHOP DRAWINGS.
14. WHERE CONSTRUCTION JOINTS ARE REQUIRED BUT NOT INDICATED ON THE DRAWINGS, THEY SHALL BE LOCATED AS NOT TO IMPAIR THE STRENGTH OF THE BEAM, SLAB OR WALL AND SHALL BE SUBJECT TO REVIEW BY THE CONTRACTING OFFICER. UNLESS INDICATED OTHERWISE ON THE DRAWINGS, PROVIDE A CONTINUOUS SHEAR KEY IN SLABS AND WALLS, AND A MINIMUM OF TWO (2) CONTINUOUS HORIZONTAL KEYS IN BEAMS. THE MINIMUM KEY SIZE SHALL BE 40mm DEEP x 1/3 THE DEPTH OR WIDTH OF THE MEMBER. REINFORCING SHALL BE CONTINUOUS THROUGH JOINT, UNLESS NOTED OTHERWISE.
15. ALL CONSTRUCTION JOINTS BELOW GRDAE SHALL HAVE WATERSTOPS, UNLESS NOTED OTHERWISE.
16. PROVIDE NECESSARY CAMBER TO ACHIEVE A FLAT AND LEVEL FLOOR FRAMING SYSTEM WITHIN ACI TOLERANCES TO THE ELEVATIONS INDICATED ON THE PLAN DRAWINGS.
17. SLOPE ROOF FRAMING SYSTEM VARY DEPTH OF ROOF FRAMING MEMBERS AND/OR PROVIDE CONCRETE TOPPING TO ACHIEVE NECESSARY SLOPE FOR ROOF DRAINAGE. DETAIL REINFORCEMENT AT SLOPED ROOF AREAS TO MAINTAIN PROPER REINFORCING BAR LOCATIONS AND CLEARANCES. ACCOUNT FOR ADDITIONAL WEIGHT OF CONCRETE IF APPLICABLE.
18. PROVIDE 20mm CHAMFERS ON ALL EXPOSED CORNERS OF COLUMS, BEAMS AND WALLS UNLESS OTHERWISE INDICATED ON THE ARCHITECTURAL DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL CONFORM WITH THE TYPICAL REINFORCING BAR CLEARNCES TABLE.
19. COMPLY WITH THE ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT OF SPECIAL FINISHES OR TREATMENTS TO EXPOSED CONCRETE.
20. REINFORCING BAR LAP SPLICES AND ANCHORANGE LENGTHS SHALL CONFORM WITH TABLE 1, “MINIMUM LAP SPLICE AND ANCHORANGE DIMENSION TABLE”.

Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

STRUCTURE SPECIFICATION 01

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. NATAKORN MATJUN
2.
3.

OWNER

SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale:
Drawn By: APA
Checked By: APA

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F. CONCRETE FRAMING

1. SPACE ALL BARS EQUALLY ACROSS GIRDER/BEAM WIDTHS AND COLUMN MIDDLE STRIPS, UNO.
2. PLACE THE FIRST SLAB BAR A DISTANCE 1/2 THE NORMAL BAR SPACING FROM OF WALL OR GIRDER/BEAM. SPACE BARS ON EACH SIDE OF GIRDER/BEAM EQUALLY ACROSS COLUMN STRIPS.
3. GIRDER ARE BEAMS THAT FRAME TO COLUMNS
4. PROVIDE NECESSARY CAMBER TO ACHIEVE A FLAT AND LEVEL SLAB WITHIN ACI TOLERANCES TO THE ELEVATIONS INDICATED ON THE PLAN DRAWINGS.
5. GROUPS OF PARELLEL REINFORCING BARS BUNDLED IN CONTACT TO ACT AS BUILT SHALL BE LIMITED TO TWO IN ANY ONE BUNDLE.

G. MASONRY

1. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE LOCATION AND SIZE OF ALL MASONRY WALLS.
2. DO NOT START CONSTRUCTION OF MASONRY WALLS ON FRAMED CONCRETE FLOORS UNTIL THE CONCRETE HAS ACHIEVED THE 28-DAY COMPRESSIVE STRENGTH AND ALL SHORING HAS BEEN REMOVED.
3. FOR GROUTED AND/OR REINFORCED MASONRY WALLS, USE MASONRY UNITS WITH CORES THAT ALIGN VERTICALLY TO PROVIDE CONTINUOUS UNOBSTRUCTED CELLS FOR GROUTING AND PLACING REINFORCING STEEL.
4. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATION AND SIZE OF ALL MASONRY WALLS. REFER TO STRUCTURAL DRAWINGS FOR ALL MASONRY WALL REINFORCING REQUIREMENTS, LAP SPLICE LENGTH FOR REINFORCING BARS IN MASONRY CONSTRUCTION SHALL BE 50 BAR DIAMETERS, UNO.
5. PROVIDE LINTELS OF REINFORCED MASONRY BOND BEAMS, LOOSE STEEL ANGLES OR PRECAST CONCRETE (CONTRACTOR'S OPTION, UNLESS INDICATED OTHERWISE ON ARCHITECTURAL DRAWINGS) OVER ALL OPENING IN MASONRY WALLS.
6. PROVIDE TEMPORARY LATERAL BRACING OF MASONRY WALLS UNTIL PERMANENT ANCHORANGE IS IN PLACE REFER TO ARCHITECTURAL DRAWINGS FOR PERMANENT ANCHORANGE DETAILS TO FLOOR AND ROOF ELEMENTS.
7. REFER TO THE SPECIFICATION FOR ADDITIONAL INFORMATION.

H. STRUCTURAL STEEL

1. PROVIDE STRUCTURAL STEEL THAT CONFORMS TO THE CRITERIA SPECIFIED IN TABLE 5 ON GEN 002.
2. WELDING ELECTRODES SHALL BE E70 XX LOW HYDROGEN (465 MPa). FOR WELDING SYSBOLS WITH NO LENGTH DIMENSION GIVEN, THE WELDING SHALL BE CONTINUOUS BETWEEN ABRUPT CHANGES IN DIRECTION. WELDS NOT OTHERWISE NOTED SHALL BE 6mm IN SIZE.
3. BOLTS AND BOLTED CONNECTIONS HSALL CONFORM TO THE REQUIREMENTS OF THE “SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325M OR A490M BOLTS” AS APPROVED BY THE COUNCIL ON REVETED AND BOLTED JOINTS. USE BEARING-TYPE BOLTS WITH THREADS EXCLUDED FROM THE SHEAR PLANE.
4. ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 36 OR 55 AS SPECIFIED ON THE DRAWINGS
5. ALL BOLTS SHALL BE TIGHTENED TO A “SNUG-TIGHT” CONDITION, UNLESS NOTED OTHERWISE.
6. TYPICAL BEAM SHEAR CONNECTIONS NOT DETAILED ON THE DRAWINGS SHALL BE DETAILED WITH ASIC STANDARD BOLTED DOUBLE ANGLE TYPE CONNECTIONS, USING A MINIMUM OF TWO (2) A325M BOLTS. CONNECTION SHALL BE CAPABLE OF RESISTING MAXIMUM BEAM END REATION.

I. ADHESIVE ANCHORS

1. PROVIDE HILTI-HY 200 ADHESIVE ANCHORS (OR APPROVED WQUAL).
2. INSTALL ANCHORS IN ACCORDANCE WITH MANUFACTURE'S REQUIREMENTS, INCLUDING CLEANING HOLES.
3. EXCEPT WHERE ANCHORS ARE DETAILED ON THE STRUCTURAL DRAWINGS, SUBMIT PROPOSED ANCHOR LOCATIONS FOR REVIEW & APPROVAL PRIOR TO INSTALLATION.

TABLE 1: ASTM A615/A615M AND ASTM A706/A706M

BAR PROPERTIES			
BAR SIZE	DIAMETER (mm)	AREA (mm^2)	WEIGHT (kg/m)
#3	9.5	71	0.560
#4	12.7	129	0.994
#5	15.9	199	1.552
#6	19.1	284	2.235
#7	22.2	387	3.042
#8	25.4	510	3.973
#9	28.7	654	5.060
#10	32.3	819	6.404
#11	35.8	1006	7.907

NOTE:

1. ALL PROJECT REINFORCEMENT SHALL BE ASTM A615/A615M (GRADE 420) WITH ADDITIONAL REQUIREMENTS OR A706/A706M (GRDAE 420) AS PER SPECIFICATION SECTION 033000.
2. UTILIZE TYPICAL BAR BENDS AND STANDARD HOOKS AS PER ACI 315 DETAILING MANUAL ON ALL SHOP AND PLACING DRAWINGS.

TABLE 2: SPECIFIED CONCRETE COVER FOR REINFORCEMENT

LOCATION	COVER (mm)
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH (FOUNDATIONS)	75
CONCRETE EXPOSED TO EARTH OR WEARTHE (FOUNDATIONS)	50
BEAMS (STIRRUPS)	40
COLUMN (TIES)	40
WALLS (BLDG, EXT LAYER, #6 AND LARGER)	50*
WALLS (BLDG, EXT LAYER, #5 AND LARGER)	40*
WALLS (BLDG, EXT LAYER)	20*
WALLS (RETAINING)	50
SLABS ON GRADE (WELDED WIRE REINFORCEMENT)	SMALLER OF 50 OR 1/3 SLAB THICKNESS FROM TOP OF SLAB

NOTE:

1. “*” INDICATES CLEAR COVER MEASURED TO WALL STIRRUPS WHEN PRESENT.
2. ALL ROOFS AND CANOPIES ARE WEATEHRPROOF AND NOT EXPOSED TO WEATHER

TABLE 4: CONCRETE PROPERTIES

STRUCTURE TYPE	f'c (MINIMUM ULTIMATE COMPLRESSIVE STRENGTH AT 28 DAYS) (MPa)	MAXIMUM WATER/ CEMENT RATIO	ENTRAINED AIR (%)
LEAN CONCRETE FILL & ROOF FILL	15	---	---
FOOTINGS &INTERIOR S.O.G	25	0.50	---
CIVIL/SITE STRUCTURES	25	0.45	6
WATER TANK STRUCTURE	30	0.45	---
EXTERIOR EXPOSED CONCRETE & SITE WALL	30	0.45	6
ALL OTHER CONCRETE	30	0.50	---

TABLE 4: MINIMUM LAP SPLICE AND DEVELOPMENT LENGTH

BAR SIZE “d”	28-DAY CONCRETE STRENGTH = 25 MPa				28-DAY CONCRETE STRENGTH = 30 MPa			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	ANCHORAGE (ld)	LAP SPLICE	ANCHORAGE (ld)	LAP SPLICE	ANCHORAGE (ld)	LAP SPLICE	ANCHORAGE (ld)	LAP SPLICE
#3	500	640	380	500	450	590	350	450
#4	660	860	510	660	610	790	470	610
#5	830	1080	640	830	760	980	580	760
#6	990	1290	770	990	910	1180	700	910
#7	1440	1870	1110	1440	1320	1710	1010	1320
#8	1650	2140	1270	1650	1510	1960	1160	1510
#9	1860	2420	1440	1860	1700	2210	1310	1700
#10	2100	2720	1610	2100	1910	2490	1470	1910
#11	2320	3020	1790	2320	2120	2760	1630	2120

TABLE 5: MINIMUM LAP SPLICE AND DEVELOPMENT LENGTH

BAR SIZE “d”	28-DAY CONCRETE STRENGTH = 25 MPa				28-DAY CONCRETE STRENGTH = 30 MPa			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	ANCHORAGE (ld)	LAP SPLICE	ANCHORAGE (ld)	LAP SPLICE	ANCHORAGE (ld)	LAP SPLICE	ANCHORAGE (ld)	LAP SPLICE
#3	740	860	570	740	680	880	520	680
#4	990	1290	760	990	910	1180	700	910
#5	1240	1610	960	1240	1130	1470	870	1130
#6	1490	1940	1150	1490	1360	1770	1050	1360
#7	2160	2810	1660	2160	1970	2560	1520	1970
#8	2470	3210	1900	2470	2260	2930	1740	2260
#9	2790	3630	2150	2790	2550	3310	1960	2550
#10	3140	4080	2420	3140	2870	3730	2210	2870
#11	3480	4530	2680	3480	3180	4130	2450	3180

NOTE:

1. USE TABLE 4 FOR UNCOATED REINFORCING WHEN CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED IS NOT LESS THAN db, CLEAR COVER IS NOT LESS THAN db, AND STIRRUPS OR TIES THROUGHT Ld IS NOT LESS THAT THE CODE MINIMUM OR CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED IS NOT LESS THAN 2db AND CLEAR COVER IS NOT LESS THAN db. IN ALL OTHER CASES USE TABLE 5.
2. WHEN LAPPING TWO DEFFERENT SIZE BARS, USE THE LAP DIMENSION OF THE SMALLER BAR OR THE DEVELOPMENT LENGTH (ANCH ld) DIMENSION OF THE LARGER BAR, WHICHEVER DIMENSION IS LARGER.
3. TOP BARS ARE DEFINED AS BEAM AND SLAB HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 300 MM OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR. HORIZONTAL REINFORCING IN WALLS SHALL BE CONSIDERED TOP BARS.

Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

STRUCTURE SPECIFICATION 02

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT

1.
2.
3.

ENGINEER

1. NATAKORN MATJUN
2.
3.

OWNER

SEAL/SIGNATURE

DRAWING INFORMATION

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Checked By: APA

SHEET No. S-104

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STRUCTURAL ABBREVIATION			
&	AND	IF	INSIDE FACE
@	AT	IJ	ISOLATION JOINT
#	NUMBER	INT	INTERIOR
Ø	DIAMETER	JT	JOINT
A/E	ARCHITECT/ENGINEER	KSI	KIPS PER SQUARE INCH
AB	ANCHOR BOLT	LE	LEFT END
ACI	AMERICAN CONCRETE INSTITUTE	LLH	LONG LEG HORIZONTAL
ADD'L	ADDITIONAL	LLV	LONG LEG VERTICAL
AHU	AIR HANDLING UNIT	LP	LOW POINT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	MATL	MATERIAL
ALT	ALTERNATE	MAX	MAXIMUM
ARCH	ARCHEITECTURAL	MECH	MECHANICAL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	MEZZ	MEZZANINE
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS	MFR	MANUFACTURER
AWS	AMERICAN WEILDING SOCIETY	MIN	MINIMUM
B	BOTTOM	MISC	MISCELLANEOUS
BAL	BALANCE	(N)	NEW
BLDG	BUILDING	NIC	NOT IN CONTRACT
BLKG	BLOCKING	NTS	NOT TO SCALE
BM	BEAM	OC	ON CENTER
BOT	BOTTOM	OD	OUTSIDE DIAMETER
BP	BASE PLATE	OF	OUTSIDE FACE
BRG	BEARING	OPNG	OPENING
BSMT	BASEMENT	OPP	OPPOSITE
BTMN	BETWEEN	P-	PIER MARK
C-	COLUMN MARK	PL	PLATE
CANT	CANTILEVER	PSF	POUNDS PER SQUARE
CIP	CAST IN PLACE	QTY	QUANTITY
CJ	CONTROL JOINT	R	RADIUS
CL	CENTER LINE	RD	ROOF DRAIN
CLR	CLEAR	RE	RIGHT END
CMU	CONCRETE MASONRY UNIT	REF	REFERENCE
COL	COLUMN MARK	REINF	REINFORCE(D),(ING),(MENT)
CONC	CONCRETE	REQ'D	REQUIRED
CONN	CONNECTION	REV	REVISION
CONST	CONSTRUCTION	RO	ROUGH OPENING
CONT	CONTINUOUS	RTU	ROOF TOP UNIT
D	DEPTH	SCHED	SCHEDULE
DET	DETAIL	SECT	SECTION
DIA	DIAMETER	SIM	SIMILAR
DIAG	DIAGONAL	SJI	STEEL JOIST INSTITUTE
DN	DOWN	SL	SLOPE
DWG	DRAWING	SOG	SLAB ON GRADE
(E).	EXISTING	SPEC	SPECIFICATION
EA	EACH	SQ	SQUARE
EE	EACH END	SS	STAINLESS STEEL
EF	EACH FACE	STD	STANDARD
EJ	EXPANSION JOINT	STL	STEEL
EL	ELEVATION	STRUCT	STRUCTURAL
ELECT	ELECTRICAL	T	TOP
ELEV	ELEVATOR	T&B	TOP AND BOTTOM
EQ	EQUAL	T/	TOPM OF
EW	EACH WAY	THRU	THROUGH
EXIST	EXISTING	TYP	TYPICAL
EXP	EXPANSION	UNO	UNLESS NOTED OTHERWISE
EXT	EXTERIOR	VERT	VERTICAL
F-	FOOTING MARK	VIF	VERIFY IN FIELD
FD	FLOOR DRAIN	W	WIDTH
FDN	FOUNDATION	W-	WALL MARK
FIN	FINISH	W/	WITH
FL	FULL LENGTH	W/O	WITHOUT
FLR	FLOOR	WP	WORJING POINT
FTG	FOOTING	WWR	WELDED WIRE REINFORCEMENT
GA	GACE,	cm	CENTIMETERS
GALV	GAVALNIZED	kN	KOLINEWTONS
GB	GRADE BEAM	kPa	KILOPASCALS
HK	HOOK	m	METERS
HORIZ	HORIZONTAL	mm	MILLIMETERS
HP	HIGH POINT	Mpa	MEGAPASCALS
HVAC	HEATING-VENTILATION-AIR CONDITIONING	N	NEWTONS
IBC	INTERNATIONAL BUILDING CODE	s	SECONDS
ID	INSIDE DIAMETER		

TABLE 5: STRUCTURAL STEEL PROPERTIES			
SHAPE	ASTM DESIGNATION	GRADE	MIN. YEILD STRENGTH Fy (MPa)
WIDE FLANGES (W)	A992/A992M	---	345
HOLLOW STRUCTURAL SECTIONS (HSS)	A500/A500M	B	315
CHANNELS (C & MC), PLATES (PL), & ANGLES (L)	A36/A36M	---	250
PIPES	A53/A53M, TYPE E	B	240

TABLE 6: CONCRETE EXPOSURE CLASS

FOUNDATIONS & BELOW GRADE CONCRETE				EXTERIOR EXPOSED CONCRETE				WATER TANK STRUCTURE				ALL OTHER CONCRETE			
F-	S-	P-	C-	F-	S-	P-	C-	F-	S-	P-	C-	F-	S-	P-	C-

NOTE:

1. EXPOSURE CATEGORY F (F0-F3) APPLIES TO CONCRETE THAT IS EXPOSED TO MOISTURE AND CYCLE OF FREEZING AND THAWING, WITH OR WITHOU DECICING CHEMICALS.
2. EXPOSURE CATEGORY S (S0-S3) APPLIES TO CONCRETE IN CONTACT SOIL OR WATER CONTAINING DELETERIOUS AMOUNTS OF WATER-SOLUABLE SUFATE IONS.
3. EXPOSURE CATEGORY P (P0-P1) APPLIES TO CONCRETE IN CONTACT WITH WATER REQUIRING LOW PERMEABILITY.
4. EXPOSURE CATEGORY C (C0-C2) APPLIES TO REINFORCED CONCRETE EXPOSED TO CONDITIONS THAT REQUIRE ADDITIONAL PROTECTION AGAINST CORROSION OF REINFORCEMENT.
5. REFER TO ACI-318 FOR EXPOSURE ACTEGORIES AND CLASSES.

STRUCTURAL SHAPE PROPERTIES - TABLE 1

MEMBER TYPE	ASTM ENGLISH DESIGNATION	ENGLISH (I-P) INFORMATION								metric (SI) INFORMATION								ASTM ENGLISH DESIGNATION
		WEIGHT	AREA	d	tw	bf	tf	Ixx	Sxx	WEIGHT	AREA	d	tw	bf	tf	Ixx	Sxx	
		lb/ft	in2	in	in	in	in	in4	in3	kg/m	cm2	mm	mm	mm	mm	cm4	cm3	
W-BEAM	W8x10	10	2.96	7.89	0.17	3.94	0.205	30.8	7.81	15	19.1	200	4.3	100	5.2	1280	127	W8x10
	W8x18	18	5.26	8.14	0.23	5.25	0.33	61.9	15.2	26.6	33.9	207	5.8	133	8.4	2580	249	W8x18
C-CHANNEL	C8x11.5	11.5	3.37	8	0.22	2.26	0.39	32.5	8.14	17.1	21.7	203	5.6	57	9.9	1340	132	C8x11.5
	MC12x10.6	10.6	3.1	12	0.19	1.5	0.309	55.3	9.22	15.8	19.9	305	4.8	38	7.8	2290	150	MC12x10.6
WT-BEAM	WT6x11	11	3.24	6.16	0.26	4.03	0.425	11.7	2.59	16.37	20.9	156	6.6	102	11	487	42	WT6x11

STRUCTURAL SHAPE PROPERTIES - TABLE2

MEMBER TYPE	ASTM ENGLISH DESIGNATION	ENGLISH (I-P) INFORMATION							METRIC (SI) INFORMATION							ASTM ENGLISH DESIGNATION
		DESIGN WALL THICKNESS, t	WEIGHT	AREA	b/t	d/t	Ixx	Sxx	DESIGN WALL THICKNESS, t	WEIGHT	AREA	b/t	d/t	Ixx	Sxx	
		in	lb/ft	in2			in4	in3	mm	kg/m	cm2			cm4	cm3	
TUBE	HSS4x4x1/4"	0.233	12.18	3.37	14.2	14.2	7.8	3.9	5.92	18.13	21.74	14.2	14.2	325	63.9	HSS4x4x1/4"

Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

STRUCTURE SPECIFICATION 03

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT

1.
2.
3.

ENGINEER

1. NATAKORN MATJUN
2.
3.

OWNER

SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale:
Drawn By: APA
Checked By: APA

SHEET No. S-105

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STRUCTURAL SHAPE PROPERTIES - TABLE 3														
MEMBER TYPE	ASTM ENGLISH DESIGNATION	ENGLISH (I-P) INFORMATION						METRIC (SI) INFORMATION						ASTM ENGLISH DESIGNATION
		WEIGHT	AREA	Ixx	Sxx	Iyy	Syy	WEIGHT	AREA	Ixx	Sxx	Iyy	Syy	
		lb/ft	in2	in4	in3	in4	in3	kg/m	cm2	cm4	cm3	cm4	cm3	
ANGLE														
	L3 1/2x3 1/2x3/8"	8.50	2.50	2.86	1.15	2.86	1.15	12.60	16.13	119	18.80	119	18.80	L3 1/2x3 1/2x3/8"

TABLE A1.1 DEFORMED INTERNATIONAL BAR DESIGNATIONS, NOMINAL WEIGHTS [MASSES], NOMINAL DIMENSIONS,AND DEFORMATION REQUIREMENTS							
BAR DESIGNATIONS [A]	NOMINAL WEIGHT lb/ft[B] [NOMINAL MASS, kg/m][C]	NOMINAL DIMENSIONS [D]			DEFORMATION REQUIREMENTS, in.[mm]		
		DIAMETER,in.[mm]	CROSS-SECTION ARE [NOMINAL MASS,in2,[mm2]]	PERIMETER,in. [mm]	MAXIMUM AVERAGE SPACING	MINIMUM AVERAGE HEIGHT	MAXIMUMU GAP (CHORD OF 12.5% OF NOMINAL PERIMETER)
Ø10	0.414 [0.617]	0.394 [10.0]	0.12 [79]	1.237 [31.4]	0.276 [7.0]	0.016 [0.40]	0.151 [3.8]
Ø12	0.597 [0.888]	0.472 [12.0]	0.18 [113]	1.484 [37.7]	0.331 [8.4]	0.019 [0.48]	0.181 [4.6]
Ø16	1.060 [1.578]	0.630 [16.0]	0.31 [210]	1.979 [50.3]	0.441 [11.2]	0.028 [0.72]	0.241 [6.1]
Ø20	1.657 [2.466]	0.787 [20.0]	0.49 [314]	2.474 [62.8]	0.551 [14.0]	0.039 [1.00]	0.301 [7.7]
Ø25	2.589 [3.853]	0.984 [25.0]	0.76 [491]	3.092 [78.5]	0.689 [17.5]	0.049 [1.25]	0.377 [9.6]
Ø28	3.248 [4.834]	1.102 [28.0]	0.95 [616]	3.463 [88.0]	0.772 [19.6]	0.055 [1.40]	0.422 [10.7]
Ø32	4.242 [6.313]	1.260 [32.0]	1.25 [804]	3.958 [100.5]	0.882 [22.4]	0.063 [1.60]	0.482 [12.2]
Ø36	5.369 [7.990]	1.417 [36..0]	1.58 [1018]	4.453 [113.1]	0.992 [25.2]	0.071 [1.80]	0.542 [13.8]

A. THE BAR PHI (Ø) DESIGNATIONS ARE BASED ON THE NUMBER OF MILLIMETERS OF THE NOMINAL DIAMETER OF THE BAR.

B. THE ASSUMED WEIGHT OF A CUBIC FOOT OF STEEL IS 490 ib/ft PER ASTM A6/A6M.

C. THE ASSUMED WEIGHT OF A CUBIC METER OF STEEL IS 7850 kg/m PER ASTM A6/A6M.

D. THE NOMINAL DIMENSIONS OF A DEFORMED BAR ARE EQUIVALENT TO THOSE OF A PLAN ROUND BAR HAVING THE SAME WEIGHT [MASS] PER FOOT [METER] AS THE DEFORMED BAR.

ALTERNATIVE BAR SIZE ANNEX TO A615/A615M

TABLE A.2 TENSILE REQUIREMENTS	
TENSILE STRENGTH, MIN, PSI [MPa]	90 000 [620]
YIELD STRENGTH, MIN, PSI, [MPA]	60 000 [420]
ELONGATION IN 8 in, [200 mm] MIN, %	
BAR DESIGNATIONS	
Ø10, Ø12, Ø16, Ø20	9
Ø25	8
Ø28, Ø32, Ø36	7

TABLE A1.3 TENSILE REQUIREMENTS	
BAR DESIGNATION	PIN DIAMETER FOR 180° BEND TESTS
Ø10, Ø12, Ø16, Ø20	3-1/2 d[A]
Ø25	5d
Ø28, Ø32, Ø36	7d

A d = NOMNAL DIAMETER OF SPECIMEN.

ALTERNATIVE BAR SIZE ANNEX TO A706/A706M

TABLE A1.2 TENSILE REQUIREMENTS	
TENSILE STRENGTH, MIN, PSI [MPa]	80 000 [550][A]
YIELD STRENGTH, MIN, PSI, [MPa]	60 000 [420]
YIELD STRENGTH, MIN, PSI, [MPa]	78 000 [540]
ELONGATION IN 8 IN. [200 mm] MIN, %	
BAR DESIGNATIONS	
Ø10, Ø12, Ø16, Ø20	14
Ø25, Ø28, Ø32, Ø36	12

TABLE A1.3 TENSILE REQUIREMENTS	
BAR DESIGNATION	PIN DIAMETER FOR 180° BEND TESTS
Ø10, Ø12, Ø16	3d[A]
Ø20, Ø25	4d
Ø28, Ø32, Ø36	6d

A d = NOMINAL DIAMETER OF SPECIMEN.

J. WELDING INFORMATION

F_{E70} =4.920 KG/CM2

WELDING THICKNESS BETWEEN PIPE, STIFFENER PLATES AND BASE PLATES = 10MM

K. CABLE CAPACITY

1. CABLE: DIAMETER 10MM M.B.L= 12,738 KG/CM2
2. BACK STAY CABLE : DIAMETER 15MM M.B.L= 17,500 KG/CM2

Required Contractor Submittals:
Submittals should be provided before construction begins include: drilled pier shop drawing, design mixes, qualification data for installer & inspector. Drilled pier construction records should be provided to OBO after completion of foundations

L. Pile installation spec should be provided in specification-to-specification section.

METHOD STATEMENT FOR BORED PILE INSTALLATION

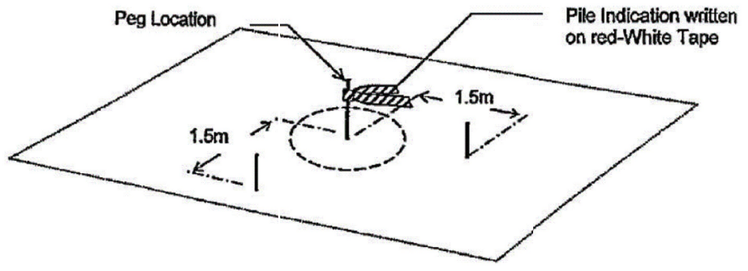
1.0 Piling to Be Carried Out By Competent Personnel
1.1 Piling work shall be carried out by trained operators, site agents and foremen who are thoroughly experienced with piling work.

2.0 Types of Bored pile
2.1 Tripod pile (DRY PROCESS)

DRY PROCESS is a small-bore pile system. Most of which are no morethan 21 meters deep, depending on the soil layer. We have a team of engineers to supervise and test bored piles to meet engineering standards. Get a bored pile. Get bored piling dry system Size diameter 35, 40, 50, 60 cm.

Tripod pile (dry process) is recommended to apply for the Shade sail construction because Of small number of effects that will be damaged an existing structure.

3.0 Formation of Borehole
3.1 Set out pile position based on the approved setting out plan and it shall be checked by the Engineer or Client Representative before piling commence.
3.2 The pile position surveyed shall be offset 1.5m in two Perpendicular directions or approved offset method prior to boring. Please refer to Figure1.



3.3 If unstable stratum is encountered during boring, a pilot hole is bored to instal a temporary casing using a vibro-hammer (refer to Figure 2 and Figure 3).
3.4 Continue boring to the designed depth (refer to Figure 4).
3.5 The approach to be taken should the soil continue to collapse below the casing depth is:

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ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

STRUCTURE SPECIFICATION 04

A&E SERVICES FOR SHADE SAIL - AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. NATAKORN MATJUN
2.
3.

OWNER

SEAL/SIGNATURE

DRAWING INFORMATION
Drawing Scale:
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05/03/2021

a) Extend the temporary casing or
b) Fluid (water or supermud) shall be introduced to stabilize the borehole.
3.6 Boring shall stop when the required penetration depth is reached.
3.7 The base of the borehole will then be cleaned with a cleaning bucket.

4.0 Installation of Reinforcement Cage
4.1 Before placing of concrete, the reinforcement cage will be lowered into the borehole by a lifting crane (refer to Figure 5).
4.2 If the reinforcement cage of more than 12m long is required, it shall be joined to a second cage by an approved method. The shorter cage shall form the lower section.
4.3 Circular plastic or concrete spacers providing a cover shall be used. These shall be attached at the links and/or a the main bars.
4.4 The vertical distance between adjacent spacers shall be approximately 3m.
4.5 The reinforcement cage shall be lowered into the borehole carefully.

5.0 Concreting
5.1 Dry Borehole
5.1.1 If the borehole is practically dry, ready mixed concrete shall be discharged directly into the borehole with a hopper.
5.1.2 Care should be taken to ensure that the concrete is discharged at the center of the borehole without disturbing the sides or hitting the reinforcement cage.
5.1.3 The concrete shall be over casted by at least 500mm above the cut-off level of the borehole.
5.2 Partially Dry Borehole
5.2.1 In borehole where groundwater seepage from the sides of the hole is less than 300mm deep, the groundwater shall be removed as much as possible after termination of
borehole.
5.2.2 Cement shall then be poured into the borehole and the base shall be cleaned by a cleaning bucket until water level is less than 200mm.
5.2.3 Ready mixed concrete shall be discharged into the borehole with a hopper.
5.2.4 Care should be taken to ensure that the concrete is
discharged at the center of the borehole without disturbing the sides or hitting the reinforcement cage.
5.2.5 The concrete shall be over casted by at least 500mm above the cut-off level of the borehole.
5.3 Wet Borehole
5.3.1 When there is continuous groundwater seepage into the borehole to such an extent that the borehole cannot be dewatered, concrete shall be discharged into the borehole
by a tremie pipe.

5.3.2 The tremie pipe shall be joined in sections and lowered into the borehole until the end of the pipe rests on the bottom of the borehole.
5.3.3 Concrete shall be discharged through a hopper which is connected to the top of the tremie pipe.
5.3.4 As the concrete level rises, the pipe sections are dismantled from the top one by one.
5.3.5 Care should be taken to ensure that the bottom of the pipe is embedded at least 2m below the concrete level ir the borehole at all times.
5.3.6 When concreting is completed, the temporary casing shall be removed by the vibro-hammer
5.3.7 The concrete shall be over casted by at least 500mm above the cut-off level of the borehole.

Step of Bore Piling

Step 1: Center setting of bored piles

Adjusted 3 legs to align the center of the pile. When checking is correct Hammer firmly on the tool stand Then use basket to drill a hole approximately 1.00 meter deep

Step 2 Temporary steel casing

2.1 Temporary ferrule size and length The temporary steel casing has a diameter of 35 cm, 40 cm, 50 cm, 60 cm. P are bored, each of which is approximately 1.00 m long, connected by a spiral system. Which is on top until the medium hard soil To prevent the movement of the hole wall in soft soil and prevent water. The basement does not allow to seep into the drilled holes which will result in poor quality of the concrete.

2.2 Correct and vertical position control in the work, hammering a temporary ferrule into each section, the needle center and vertical position are always checked. In order to prevent the needle from tilting

Allowable deviation

- Horizontal deviation of 5 cm
  for single pile.
- Horizontal deviation of 7 cm
  for group piles.
- Vertical deviation 1: 100
  overall

Step 3 drilling

3.1 Equipment used for drilling In soft soils, a tongue-type basket is used to collect the soil by its own weight. Whe the basket is thrown into the borehole, the soil will be compacted into the basket and will not come off due to the tongue blocking when it is lifted. Repeat the same process until the soil is filled with a basket, then pour out. Drilli continues until the soil is medium hard. Therefore switched to a non-tongue basket at the end of storage until the desired depth was obtained

3.2 Soil erosion inspection without temporary ferrule During drilling, remove the soil. Will always check whether th soil walls collapse or collapse or not. Based on the type of soil collected, it should correspond to its depth and be similar to that of the first solid needle. If the soil is detected as a result of collapse, it will be corrected immediately temporarily hammering the ferrule further.

Step 4 Checking the pre-drilled holes before adding the reinforcement

4.1 Depth measurement It was measured from the length of the rope and the length of the basket.
4.2 bottom inspection Use a spotlight to look at the bottom of the hole whether it has collapsed into the water or not there is water seepage at the bottom of the pit, about 50 cm of dry concrete will be poured down and pushrod tightl with a steel ball. Then, use 1: 1.5 sand mortar, pour approximately 30-50 cm. Before adding the iron (only in case water seeping in the bottom of the hole).

Step 5 put reinforcement

5.1 types of reinforcement Round bars according to TIS 20-2524 (SR-24), deformed bars according to TIS 24-2524 (SD-30)
5.2 Size and quantity of reinforcement The steel connection was made by the method of connecting not less than 40 times the diameter and using tightly twisted tie-wire.
5.3 Adding an iron Lower the steel cage in the center of the drilled hole to the desired level. And held firmly so tha while pouring concrete, the steel cage will not move

Step 6: pouring concrete

6.1 types of concrete Concrete used as a concrete mix on site Or ready-mixed concrete (READY MIX) with compressive strength of 28 days when tested by 15 x 30 cm cylinder rods of not less than 210 kg / cm3. The collap of the concrete is approximately 8-12 cm to allow the concrete to be self-compacted when poured into the hole.
6.2 Method of pouring concrete Once the holes are inspected and approved, concrete can be poured. The concrete w be poured immediately so that the hole will not weaken or affect the humidity in the air for too long until the shear force is lost. Concrete is poured through a funnel. The cone end is a 15 cm diameter pipe, 3.0 m long, the concrete will fall straight without hitting the wall, drilled holes or steel cages, reducing concrete separation.

6.3 How to make concrete more firm When pouring concrete to the -5.00 to -3.00 level from the current soil level, i will be airtight to make the concrete more compact.

Step 7 Temporarily removing the ferrule

Concrete must be poured at a level higher than the temporary steel casing. Will begin to remove the steel casing Normally, when removing the steel casing, there must be concrete inside the steel casing for not less than 3 meters in order to prevent the soft soil from compressing.

This will change the size of the bored pile and prevent groundwater from seeping into the hole before the temporary steel casing is completely removed. The concrete must be filled approximately enough and allow the concrete to be 30-75 cm higher than the required level in case the pile head is low from the current soil level. To prevent the needle at the desired level from being dirty due to the material or soil falling. After completely removing the steel casing

Step 8 Record the pile preparation report. Recorded at the
construction office where piling works Report of the
preparation of bored piles

- 8.1 Piling number
- 8.2 Date of drilling and start time of drilling Completion time in drilling Time to start pouring concrete Tim to temporarily withdraw steel pipes until finished
- 8.3 level soil level cut the needle head Pile end depth Length of temporary casing steel tube
- 8.4 Needle center tolerance And the deflection of the vertical pile
- 8.5 Details of the soil layer
- 8.6 Details of reinforcement in piles And the amount of concrete
- 8.7 The obstacles that arise Or any unusual event
- 8.8 Diagnostic charge for building staff, designer engineers, supervisors of the respective piles

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ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

STRUCTURE SPECIFICATION 05

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.
ENGINEER
1. NATAKORN MATJUN
2.
3.
OWNER

SEAL/SIGNATURE

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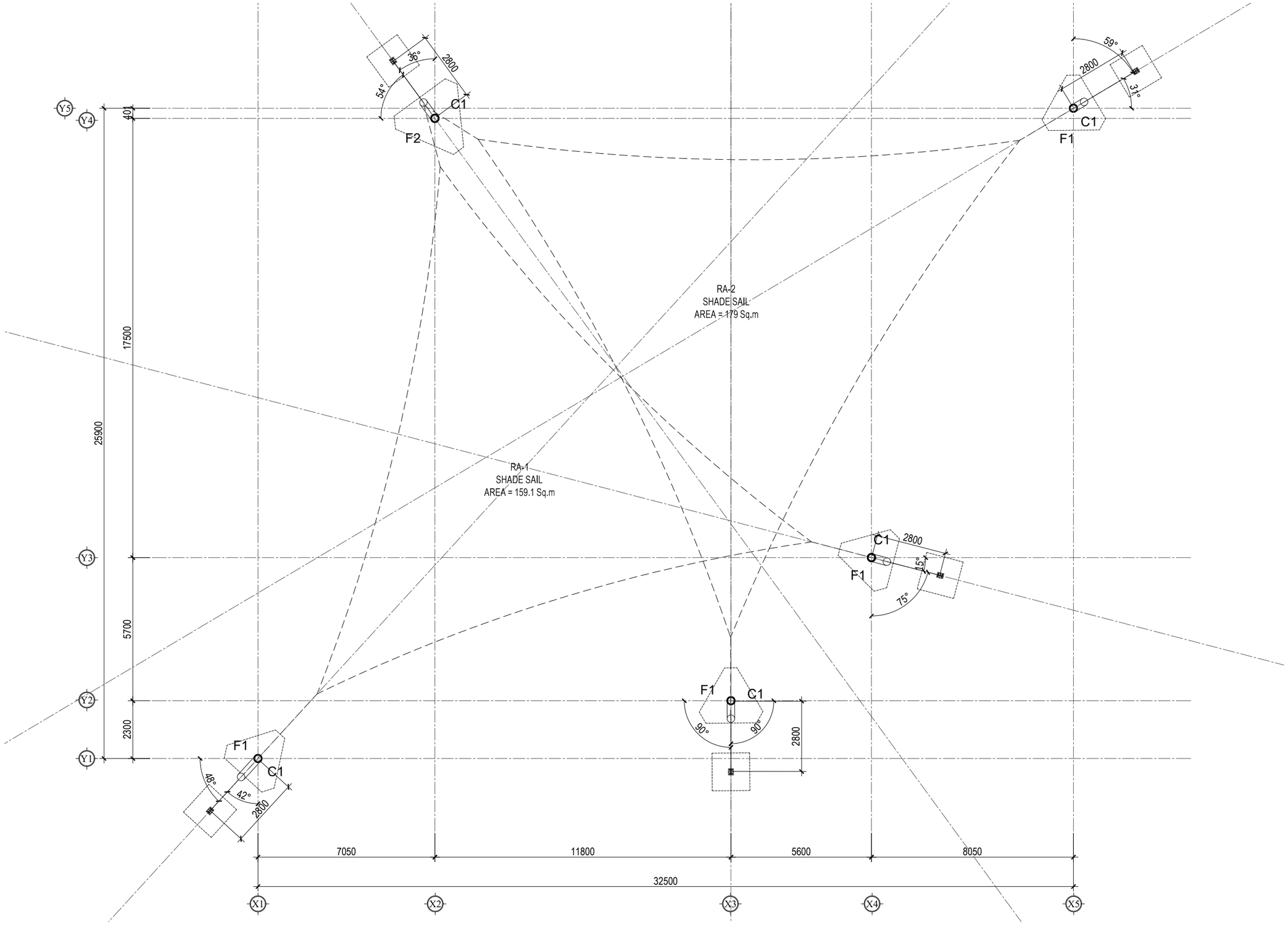

F1	RC. FOOTING 2200x2540x800 mm	C1	STEEL COLUMN 300mm
F2	RC. FOOTING 3040x2630x800 mm	C1	STEEL COLUMN 355mm
F3	RC. FOOTING 1500x1500x1000 mm		

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& GRAPHICS

Phonephanao Rd, B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

FOOTING PLAN

A&E SERVICES FOR SHADE SAIL

-

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

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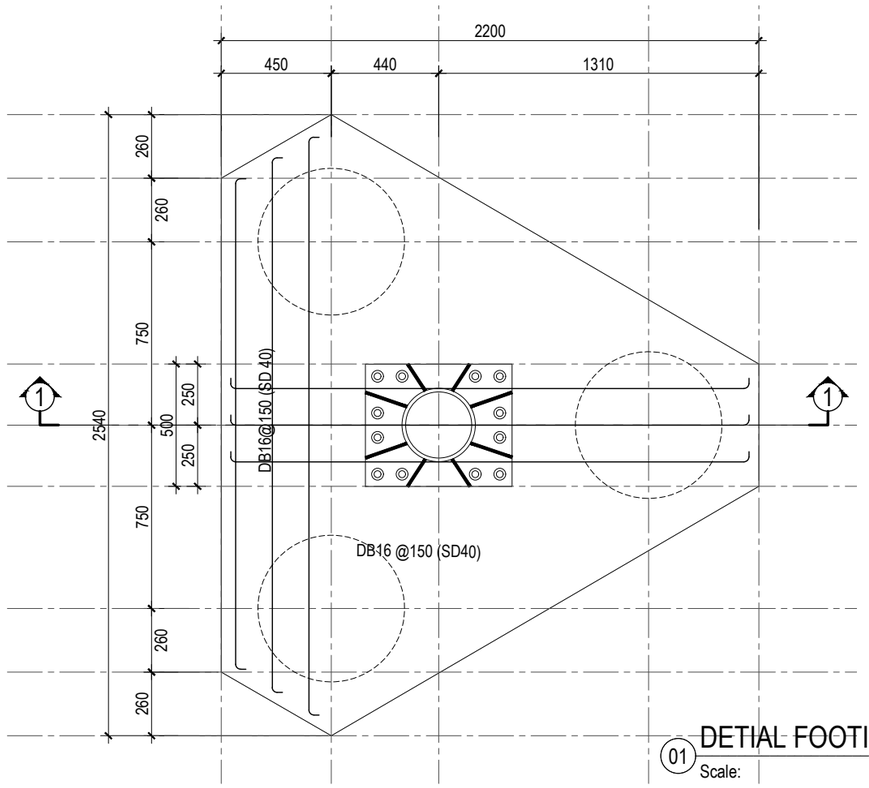

01 DETIAL FOOTING PLAN F 1
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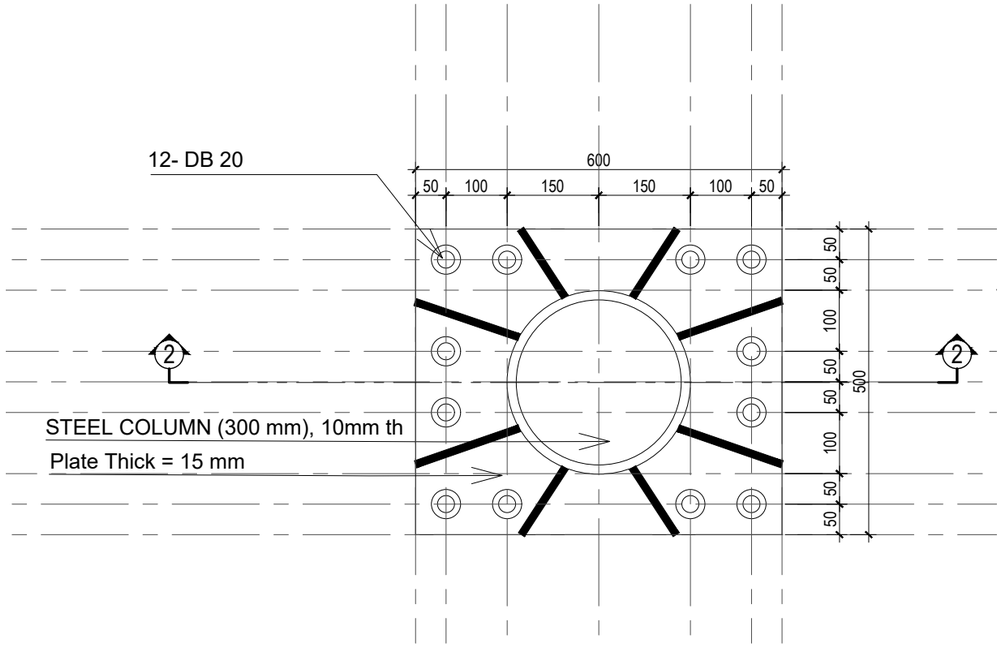

03 DETAIL COLUMN-BASE PLAN F1
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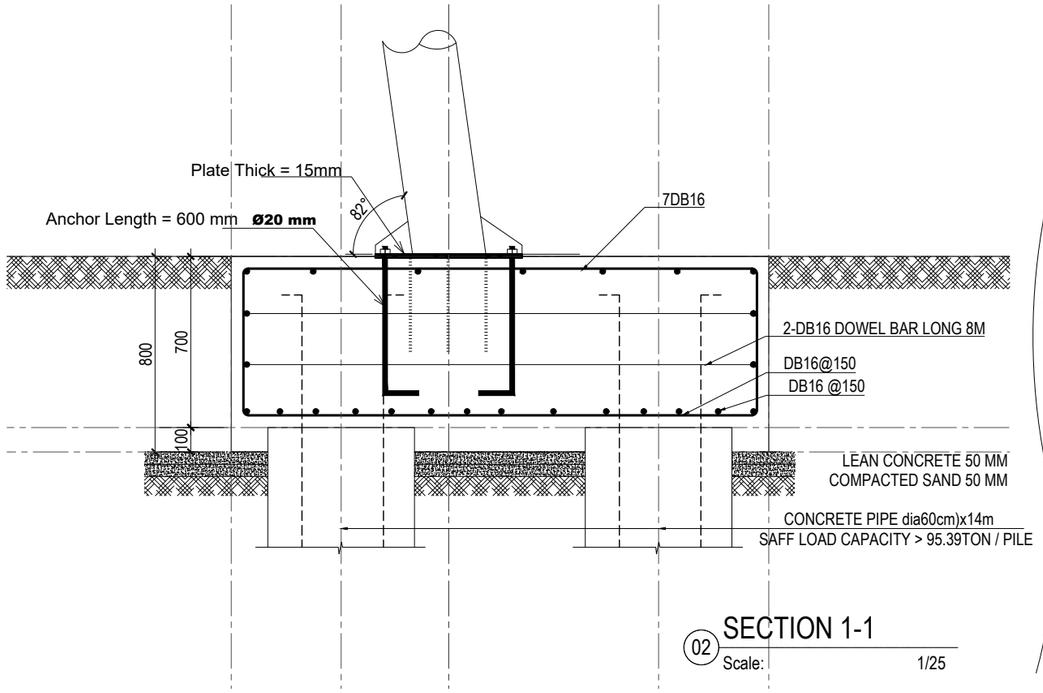

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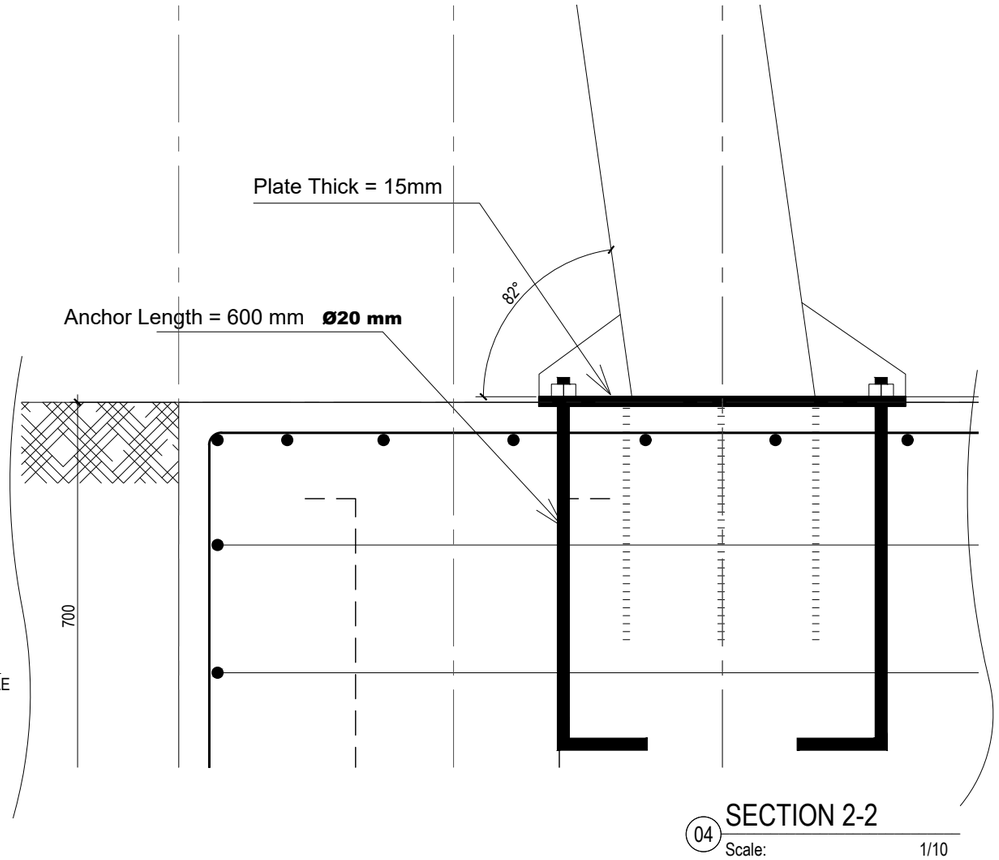

04 SECTION 2-2
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& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

COLUMN BASE & FOOTING DETAIL F1

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.
ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.
OWNER

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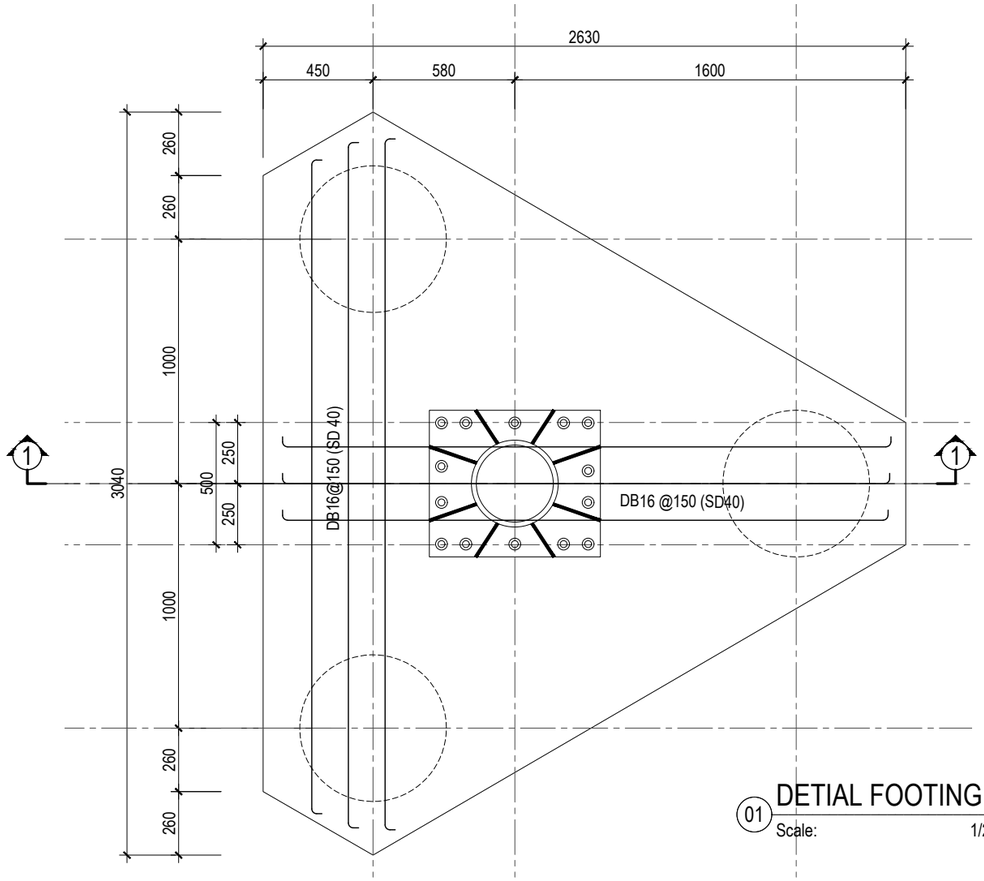

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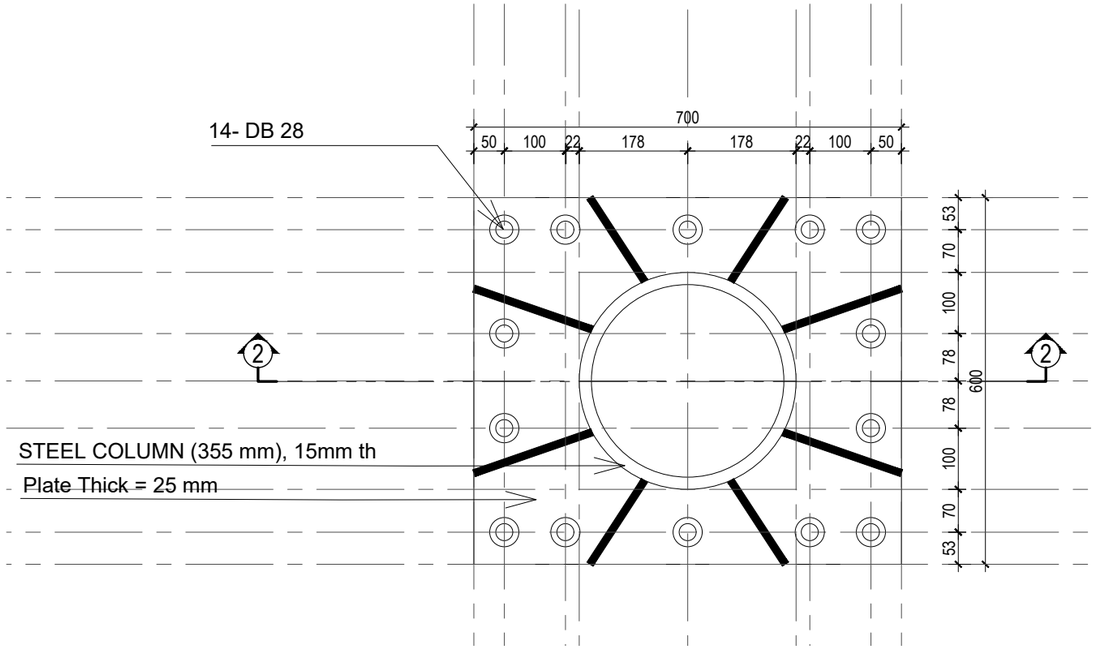

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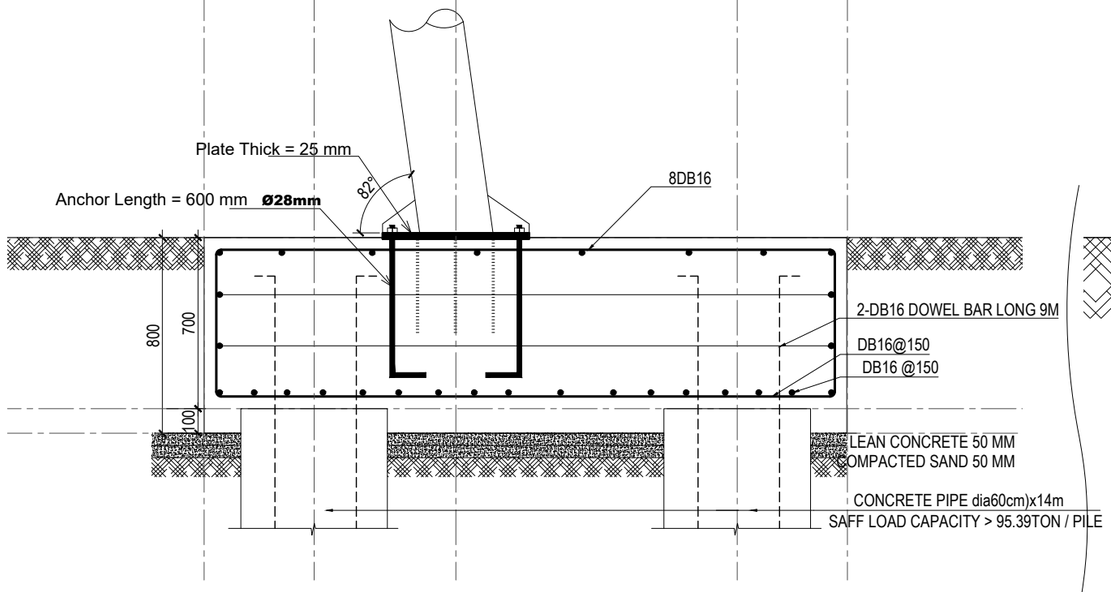

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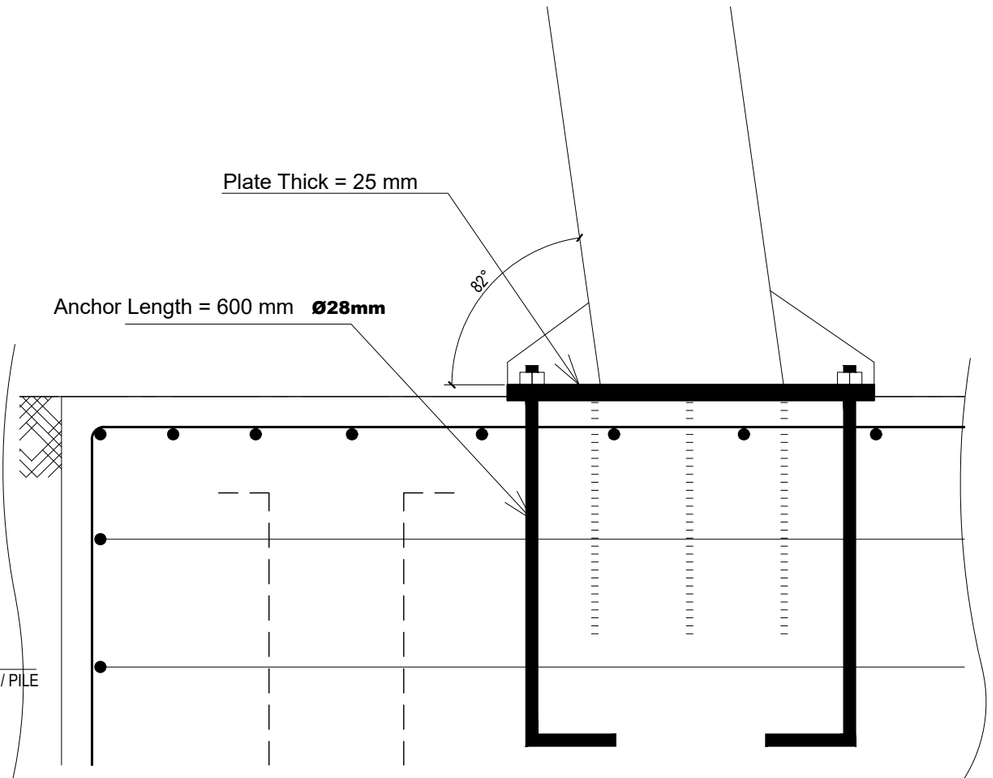

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LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

COLUMN BASE & FOOTING DETAIL F2

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.
ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.
OWNER

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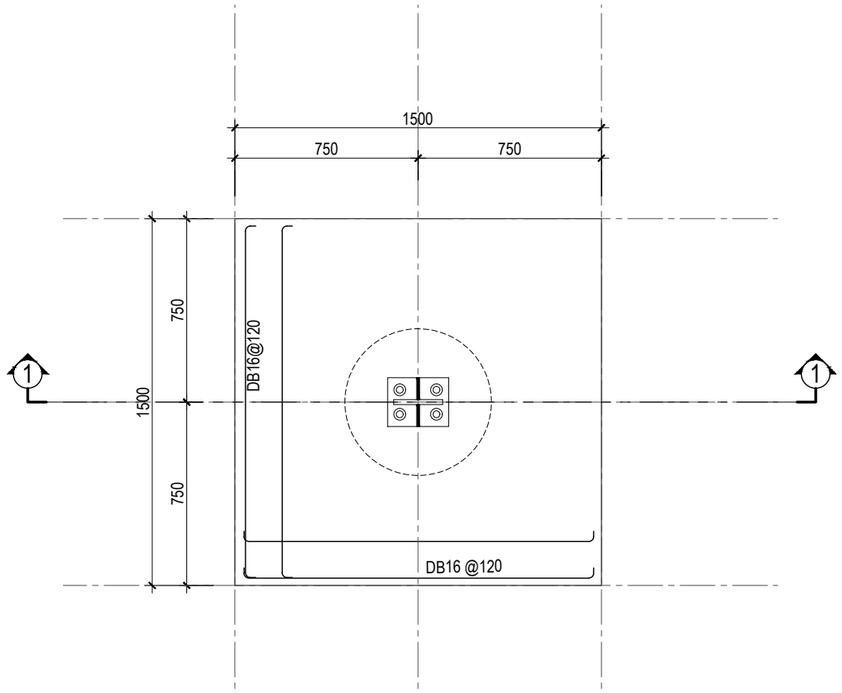
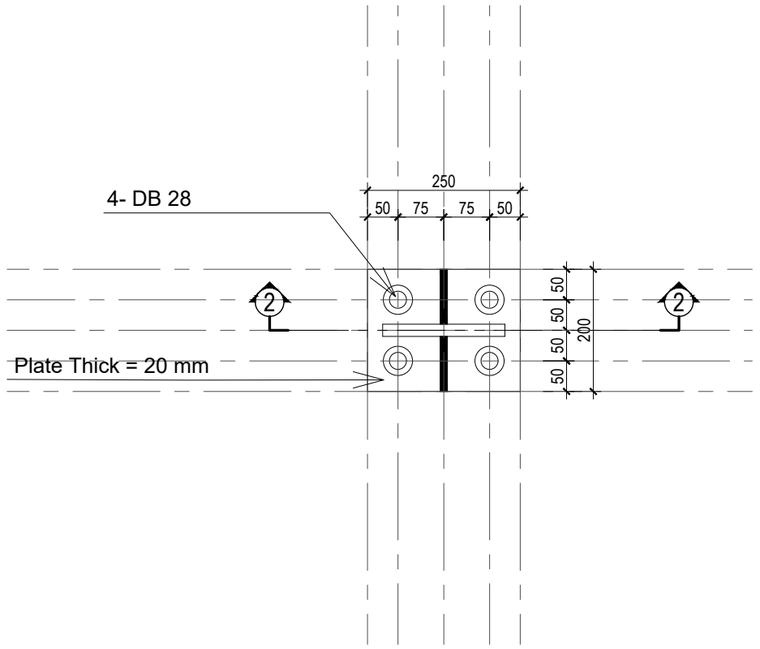


01 DETIAL FOOTING PLAN F 3
Scale: 1/25



03 DETAIL COLUMN-BASE PLAN F3
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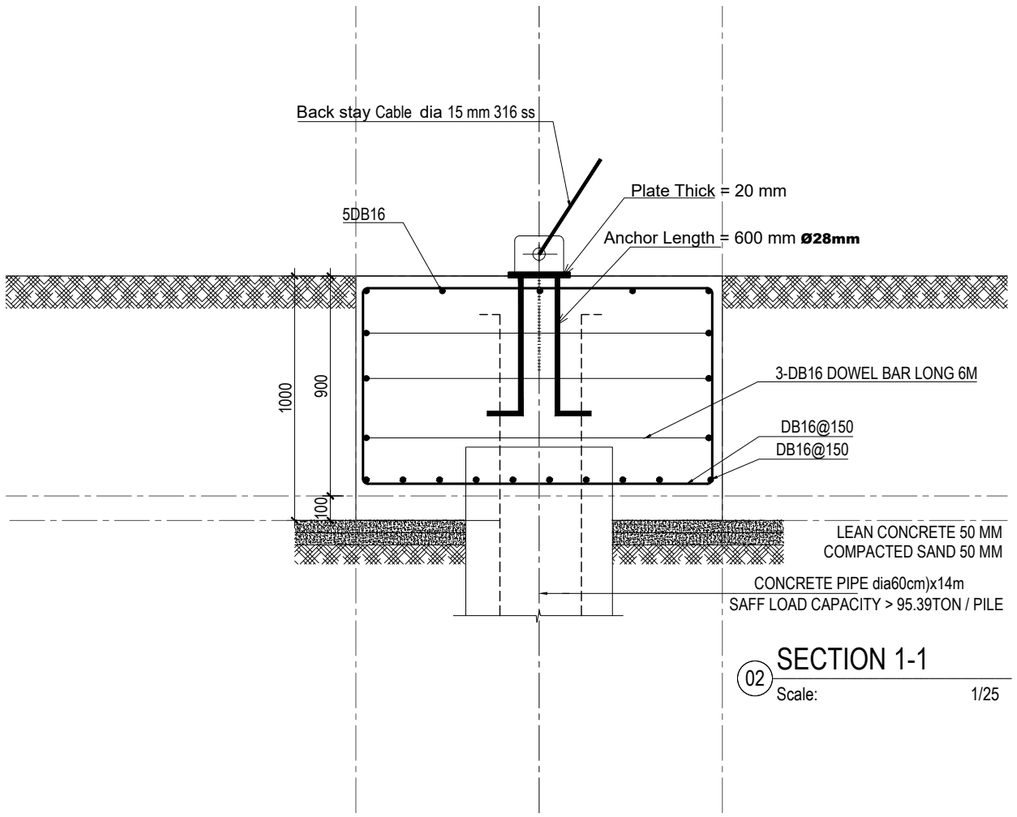

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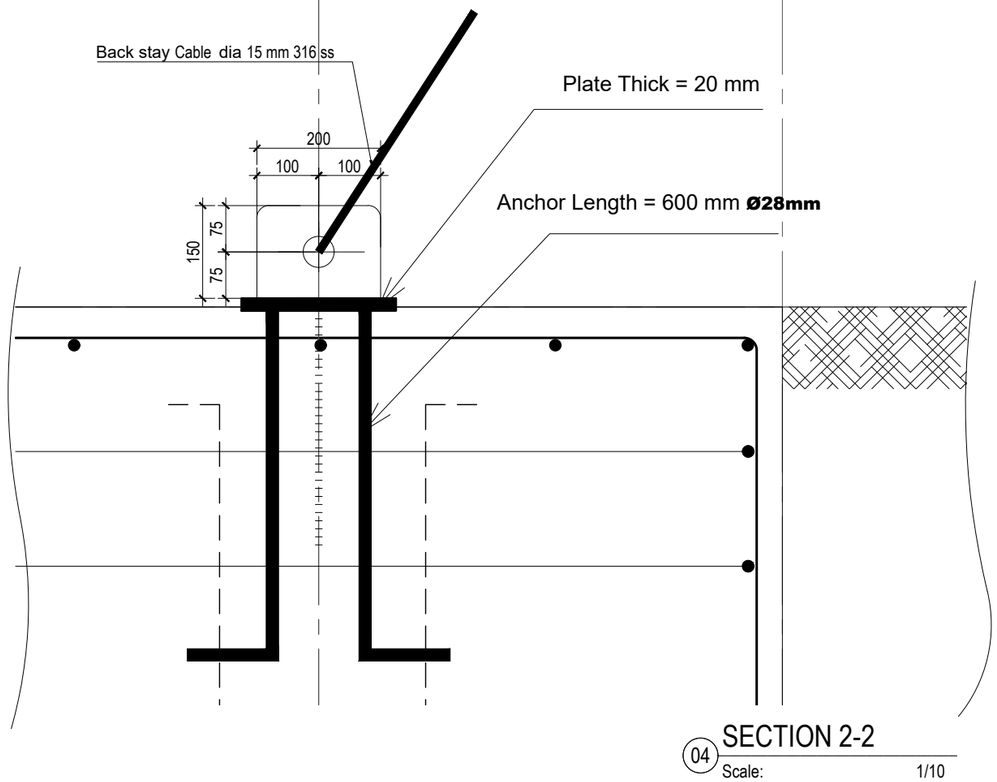

04 SECTION 2-2
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LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

COLUMN BASE & FOOTING DETAIL F3

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.

OWNER

SEAL/SIGNATURE

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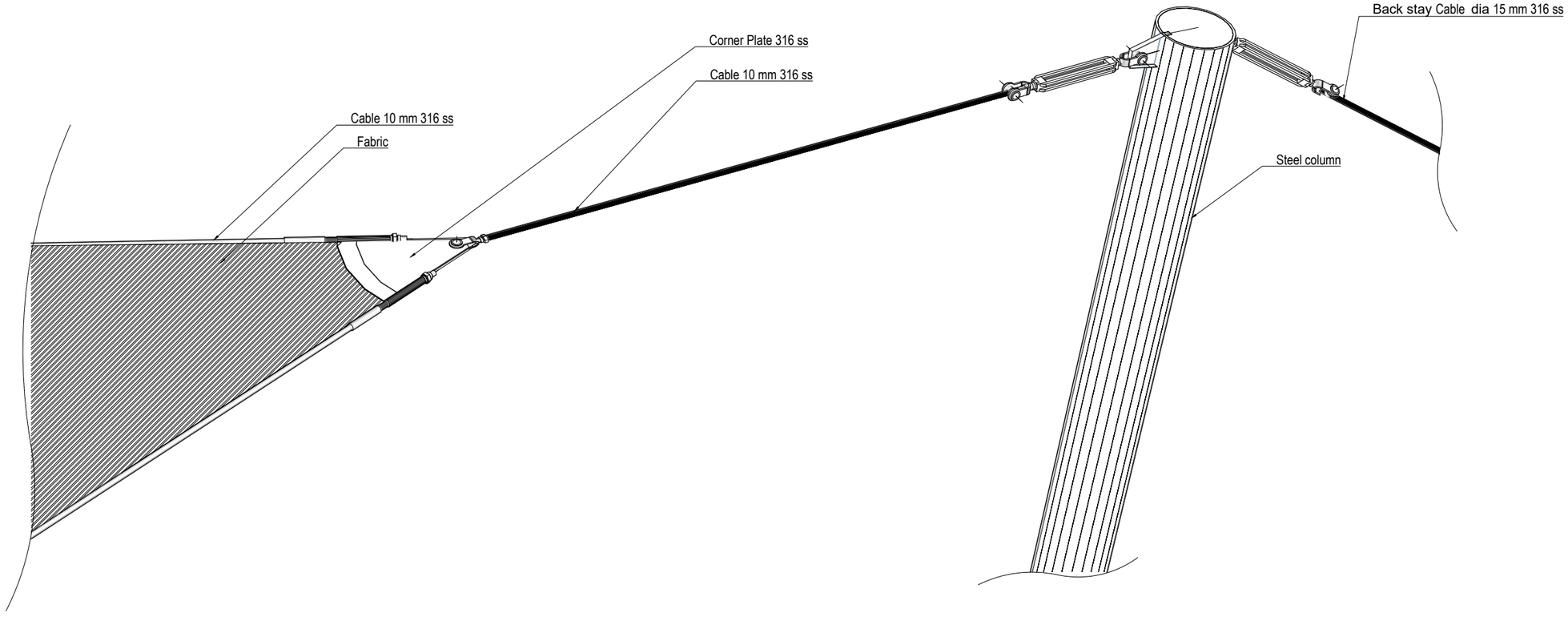

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& GRAPHICS

Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459

Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

JOINT TENSION DETAIL

A&E SERVICES FOR SHADE SAIL
-
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT	
1.	
2.	
3.	
ENGINEER	
1.	Dr. Doungmixay DOUNSUVANH
2.	
3.	
OWNER	

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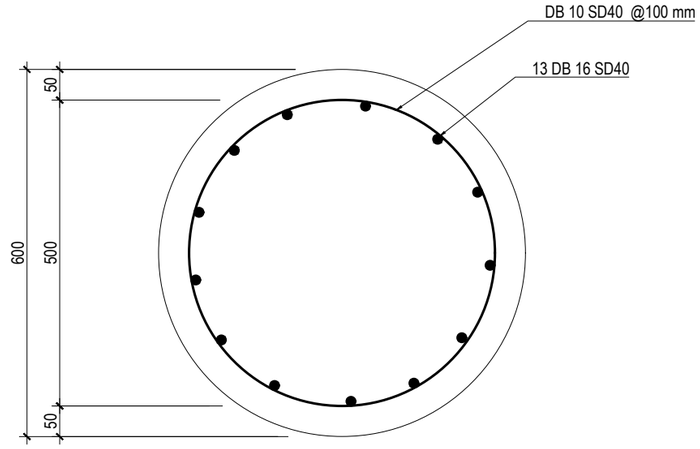
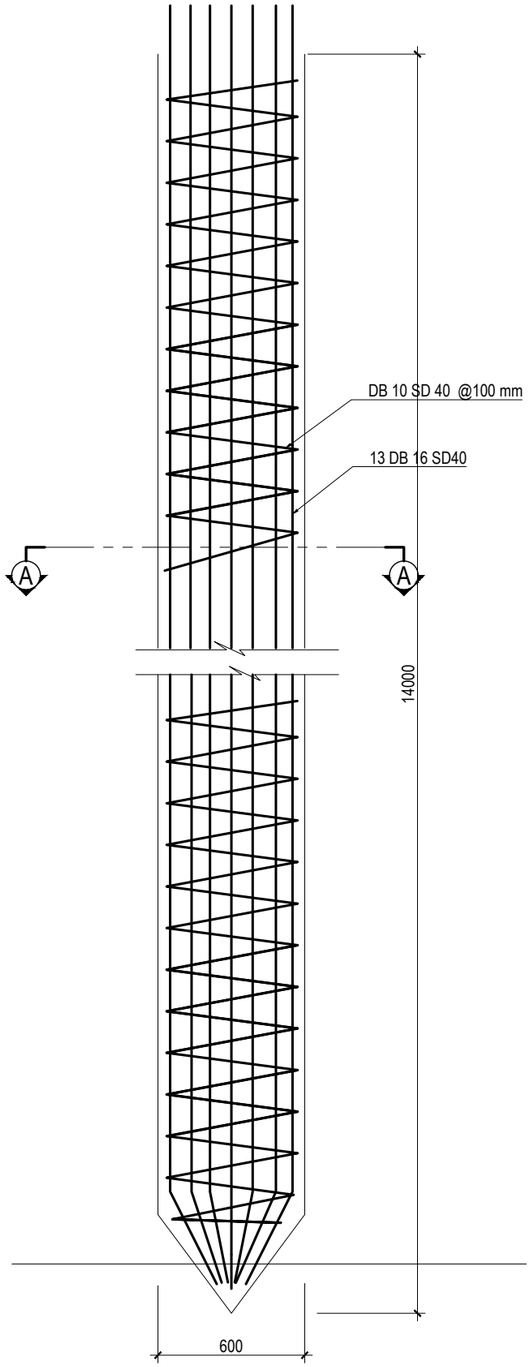
SHEET No. S-205

05/03/2021

	Description
Bore Pile	ø 600 mm
Cover	50 mm
Rebar	DB 16 SD40
Stirrup	DB 10 SD40



01 Section A-A
Scale: 1/10



02 Pile Detail
Scale: 1/25

apa Design&Consultant
ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS
Phonephanao Rd. B. Phonephanao
M.Saysettha,Vientiane Lao PDR.
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPD19-01

A&E SERVICES FOR SHADE SAIL
AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

Pile Detail

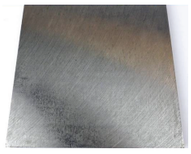
ARCHITECT
1.
2.
3.
ENGINEER
1. Dr. Doungmixay DOUNSUVANH
2.
3.
OWNER

SEAL/SIGNATURE

DRAWING INFORMATION
Drawing Scale: 1/10 1/25
Drawn By: APA
Checked By: APA

SHEET No. S-206

05/03/2021

FABRIC		colour : Natural Code : 45003 Num Width* : 3m Length** : 40m Cover Factor : 97.9 Shade Factor : 74.3 Av% Trans : 25.7 Av% UVR Trans : 3.2 Av PAR Trans : 30.1 % UVR Block : 96.8 PF : 35 PF Calculate : 62.4	Brand: GALE PACIFIC
CABLE		1. Cable: Diameter 10mm M.B.L= 12,738 Kg/cm SRS STRUCTURAL CODE: SRS- SCS-10P 2. Backstay Cable : Diameter 15mm M.B.L= 17,500 Kg/cm2 B3 STRUCTURAL CODE: SRS- B32-15X	Brand: STRUDYNA BANGKOK THAILAND
STEEL COLUMN		C1: D: 30.0cm Thickness : 1.0cm C2: D: 35.5cm Thickness : 1.5cm	INDUSTRY NAME: PHU GIA INDUSTRIAL STEEL COMPANY
ANCHOR BOLT		Anchor bolts DB20 = 2 cm Anchor bolts DB20 = 2.8 cm	STANLESS BOLT INDUSTRY
STEEL PLATE		Thickness for C1 : 15mm Thickness for C2: 25mm	INDUSTRY NAME: PHU GIA INDUSTRIAL STEEL COMPANY
CONCRETE		Mixed Concrete = 25 Mpa	INDUSTRY NAME: CSC / CPAC
REINFORCEMENT STEEL REBAR		Grade of Main Rebar SD 40 = 40000 tons/m^2 Grade of Sub-Rebar SD 24 = 24000 tons/m^2	INDUSTRY NAME: XIENGKHUAN STEEL (LAO PDR)

Design&Consultant

ARCHITECTURE - INTERIORS
LANDSCAPE - CONSULTANTS
& GRAPHICS

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M.Saysettha,Vientiane Lao PDR.,
Tel/Fax: 856-01 263 840 Box: 1459
Email Address:
apa.2002@hotmail.com

PROJECT No. APAPDA01

MATERIAL SPECIFICATION

A&E SERVICES FOR SHADE SAIL

AMERICAN EMBASSY VIENTIANE RUE BARTHOLONIE (THAT DAM)

ARCHITECT
1.
2.
3.

ENGINEER
1. NATAKORN MATJUN
2.
3.

OWNER

SEAL/SIGNATURE

DRAWING INFORMATION

Drawing Scale:
Drawn By: APA
Checked By: APA

SHEET No. MS-101

05/03/2021